

## E.2.2.1 Concepts and Vocabulary

### E.2.2.1.1 Car Movement

This subclause illustrates the creation of a ‘building block’ of concepts and related vocabulary, defined once and used in more than one context. [car movement](#) is used in both [rental](#) and [car transfer](#) (logistical movement of a car by EU-Rent staff).

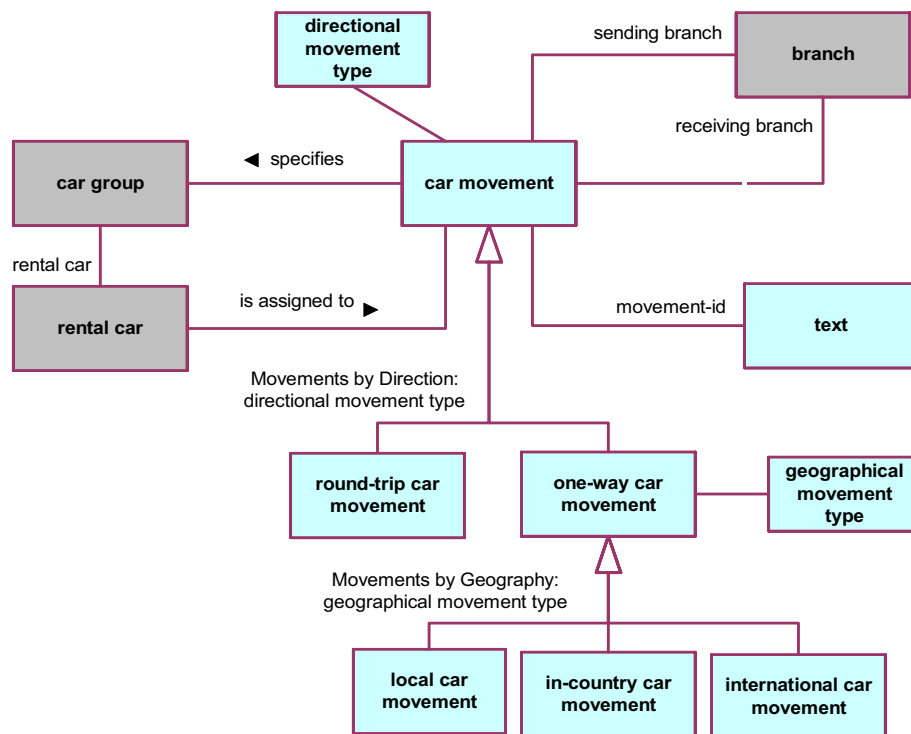


Figure E.3 - Car Movements

### car movement

- Definition: planned movement of a rental car of a specified car group from a sending branch to a receiving branch
- Reference Scheme: movement-id
- Description: A car movement meets the business requirement that a car of a given group has to be moved between branches (“we need to move a full-size car from the London City branch to the Heathrow Airport branch”). A specific car will be assigned to it at some time, not necessarily when the requirement is first identified.
- Note: car movements play roles in both ‘rental’ and ‘car transfer’ and car movements are scheduled in these roles.

### car movement has movement-id

- Necessity: Each car movement *has* exactly one movement-id.

### car movement has receiving branch

- Necessity: Each car movement *has* exactly one receiving branch.

### car movement has sending branch

- Necessity: Each car movement *has* exactly one sending branch.

### car movement specifies car group

- Synonymous Form: car group *is specified in* car movement
- Necessity: Each car movement *specifies* exactly one car group.

### directional movement type

- Concept Type: categorization type
- Definition: concept that specializes the concept ‘car movement’ and that classifies a car movement based on whether the car is moved to a different branch or not

### geographical movement type

- Concept Type: categorization type
- Definition: concept that specializes the concept ‘one-way car movement’ and that classifies a one-way car movement based on whether it crosses local area or international boundaries

### in-country car movement

- Concept Type: geographical movement type
- Definition: one-way car movement that is not in-area and is not international
- Note: This means that the movement is between two local areas in the same country.
- Necessity: in-country car movement *is included in* Movements by Geography.

### international car movement

- Concept Type: geographical movement type
- Definition: one-way car movement that is international
- Necessity: international car movement *is included in* Movements by Geography.

### local car movement

- Concept Type: geographical movement type

Definition: one-way car movement that is in-area  
 Necessity: local car movement is included in Movements by Geography.

### movement-id

Concept Type: role  
 Definition: text that is assigned by EU-Rent as unique identifier of car movement  
 Note: A given car could be moved more than once between the same two branches, perhaps even on the same day. Movement-id is needed to provide a reliable reference scheme.

### Movements by Direction

Definition: segmentation that is for the concept 'car movement' and subdivides car movements based on directional movement type  
 Necessity: Movements by Direction contains the categories 'one-way movement' and 'round-trip movement'.

### Movements by Geography

Definition: segmentation that is for the concept 'one-way car movement' and subdivides one-way car movements based on geographical movement type  
 Necessity: Movements by Geography contains the categories 'in-country car movement' and 'international car movement' and 'local car movement'.

### one-way car movement

Concept Type: directional movement type  
 Definition: car movement that is not round-trip  
 Necessity: one-way car movement is included in Movements by Direction.

### sending branch

Concept Type: role  
 Definition: branch that is the origin of a car movement

### rental car is assigned to car movement

Necessity: At most one rental car is assigned to each car movement.  
 Necessity: The rental car that is assigned to a car movement is of some car model that is included in the car group that is specified in the car movement

### receiving branch

Concept Type: role  
 Definition: branch that is the destination of a car movement

### round-trip car movement

Concept Type: directional movement type  
 Definition: car movement that is round-trip  
 Necessity: round-trip car movement is included in Movements by Direction.

## Characteristics

### car movement *being in-area*

Concept Type: characteristic

Definition: car movement *having receiving branch that is included in the local area of the sending branch of the car movement*

### car movement *being international*

Concept Type: characteristic

Definition: car movement *having country of sending branch that is not the country of receiving branch of the car movement*

### car movement *being round-trip*

Concept Type: characteristic

Definition: car movement *having sending branch that is the receiving branch of the car movement*

## E.2.2.1.2 Car Transfers

“Car Transfer” illustrates two features of SBVR usage:

- Use of a “building block” as defined in car transfer includes one-way car movement.
- A trade-off of redundancy (in the sense of defining a concept both directly and indirectly) against simplification of logical formulation and representation.

For example, EU-Rent defines transferred car as the concept ‘rental car that is assigned to the one-way car movement that is included in a car transfer.’

*Note that both of these are matters of practice, not mandated by SBVR. Decisions on reuse and redundancy are business decisions made by the semantic community (here, EU-Rent) to help it manage its body of shared meanings and vocabularies.*

Generally, derivable necessities are not restated. For example, a car movement has exactly one sending branch; a car transfer includes exactly one one-way car movement; the pick-up branch of a car transfer is the sending branch of the included one-way car movement. There is no restated necessity: car transfer has exactly one pick-up branch.

*Again, this is a matter of practice. If a semantic community would prefer the derivable necessities to be explicit, SBVR will support it.*

“Redundant” concepts are specified using structural rules (necessities). For example:

### car transfer has transferred car

Necessity: The transferred car of a car transfer is the rental car that is assigned to the one-way car movement that is included in the car transfer.

One extension of the approach is carry-over of the segmentation of car transfers by geographical movement type (local, in-country, and international). The segmentation and categorization type are not repeated. The categories of car transfer are specified as corresponding to the respective categories of car movement.

Note: fact types derived from inclusion of fixed period and one-way car movement (e.g., car transfer has transfer pick-up branch) are not shown on the diagram, but are defined in the text below.

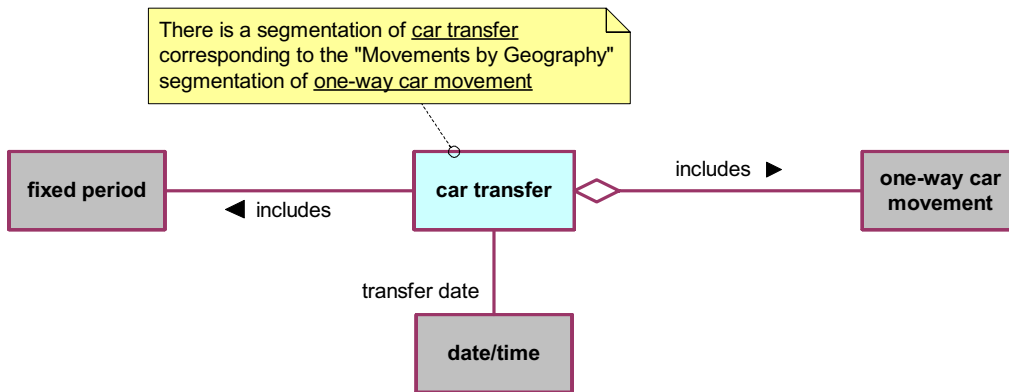


Figure E.4 - Car Transfers

### car transfer

Definition: logistical action by EU-Rent, transferring a rental car between branches on a given day

### car transfer has transfer date

Necessity: each car transfer has exactly one transfer date.

### car transfer has transfer drop-off branch

Necessity: A car transfer has a transfer drop-off branch if and only if the transfer drop-off branch is the receiving branch of the one-way car movement that is included in the car transfer.

### car transfer has transfer drop-off date/time

Necessity: A car transfer has a transfer drop-off date/time if and only if the transfer drop-off date/time is the actual end date/time of the fixed period that is included in the car transfer.

### car transfer has transfer pick-up branch

Necessity: A car transfer has a transfer pick-up branch if and only if the transfer pick-up branch is the sending branch of the one-way car movement that is included in the car transfer.

### car transfer has transfer pick-up date/time

Necessity: A car transfer has a transfer pick-up date/time if and only if the transfer pick-up date/time is the actual start date/time of the fixed period that is included in the car transfer.

### car transfer has transferred car

Necessity: A car transfer has a transferred car if and only if the transferred car is the rental car that is assigned to the one-way movement that is included in the car transfer.

### car transfer includes car movement

Necessity: each car transfer includes exactly one car movement.

### car transfer includes fixed period

Necessity: each car transfer includes exactly one fixed period.

Note: EU-Rent does not schedule car transfers within their transfer dates. It wants to know, at the end of the transfer, the actual pick-up and drop-off times. By the time EU-Rent is interested in the period of the transfer, it is in the past - and so is fixed.

### in-country car transfer

Definition: car transfer that includes an in-country car movement

### international return

Definition: car transfer that includes an international car movement

### local car transfer

Definition: car transfer that includes a local car movement

### transfer date

Concept Type: role

Definition: date that a car transfer is scheduled for

Note: The transfer date is usually scheduled in advance. The pick-up date/time and drop-off date/time are the actual times during the day, notified when the transfer is completed.

### transfer drop-off branch

Concept Type: role

Definition: branch at which the transferred car of a car transfer is dropped off

### transfer drop-off date/time

Concept Type: role

Definition: date/time when the transferred car of a car transfer is actually dropped off

### transfer pick-up branch

Concept Type: role

Definition: branch from which the transferred car of a car transfer is picked up

### transfer pick-up date/time

Concept Type: role

Definition: date/time when the transferred car of a car transfer is actually picked up

### transferred car

Concept Type: role

Definition: rental car relocated by a car transfer

### E.2.2.1.3 EU-Rent Locations

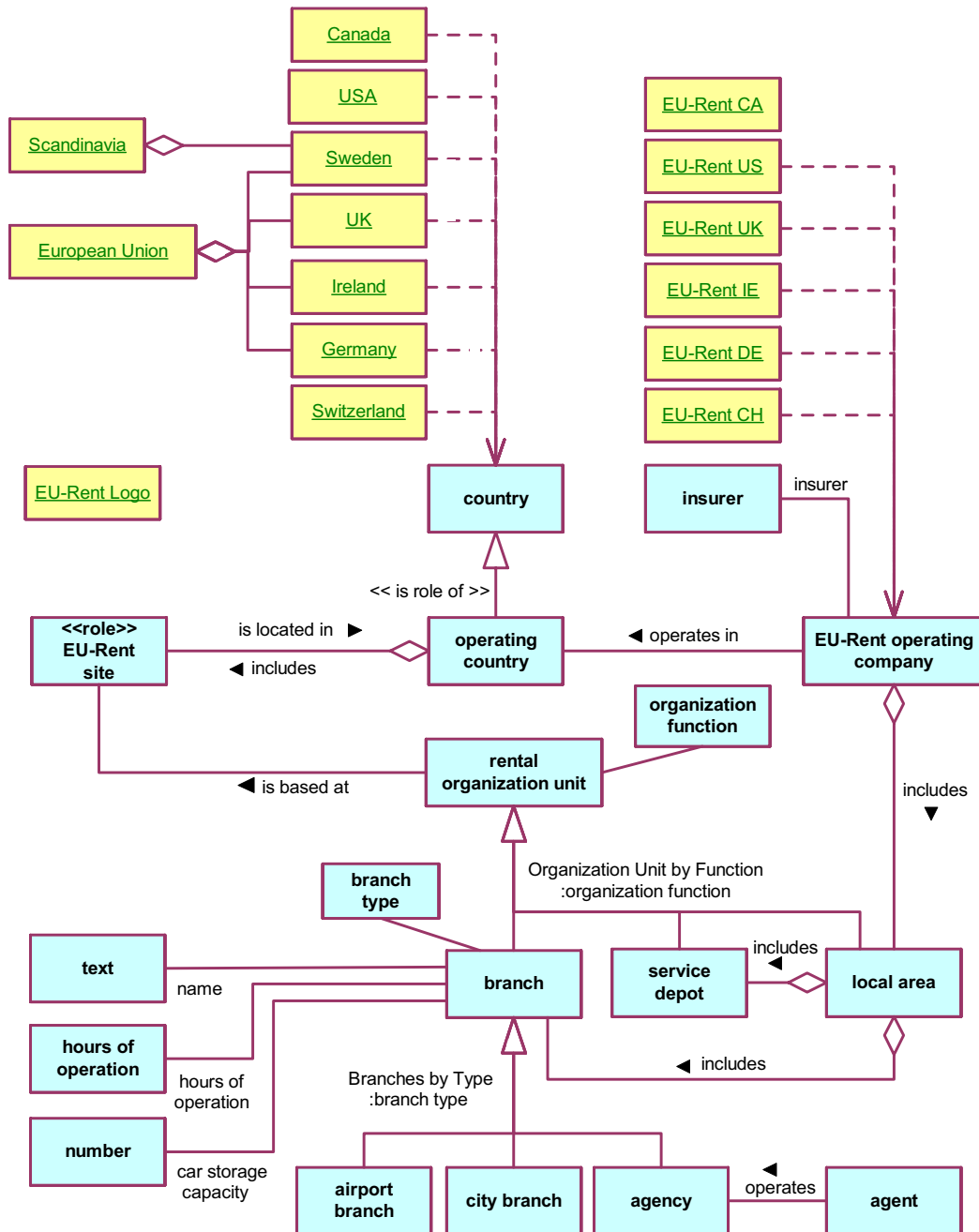


Figure E.5- EU-Rent Locations

#### agency

Concept Type: branch type

Definition: branch that does not have an EU-Rent location and has minimal car storage and has on-demand operation

Necessity: the concept 'agency' is included in Branches by Type.

### agent

Definition: organization external to EU-Rent that carries out car rental business on behalf of EU-Rent

Example: Hotel, travel agent.

### agent operates agency

Note: Operation is usually by part-time staff who will carry out the entire workflows for rental and return.

### airport branch

Concept Type: branch type

Definition: branch that has an EU-Rent location and has large car storage and has 24-7 operation

Note: This kind of branch is usually at or near a major airport or rail terminal and has sufficient staff to have specialized roles in the workflow.

Necessity: the concept 'airport branch' is included in Branches by Type.

### branch

Concept Type: organization function

Definition: rental organization unit that has rental responsibility

Necessity: the concept 'branch' is included in Organization Units by Function.

### branch has car storage capacity

Concept Type: is-property-of fact type

### branch has country

Necessity: The country of a branch is the operating country of the operating company that includes the local area that includes the branch.

### branch has hours of operation

Concept Type: is-property-of fact type

### branch has name

Concept Type: is-property-of fact type

### branch is included in local area

Concept Type: partitive fact type

Synonymous Form: local area includes branch

Necessity: Each branch is included in exactly one local area.

### branch type

Definition: concept that specializes the concept 'branch' and that classifies a branch based on hours of operation and car storage capacity



### Branches by Type

- Definition: segmentation that is for the concept 'branch' and subdivides branches based on branch type
- Necessity: Branches by Type contains the categories 'airport branch' and 'city branch' and 'agency.'

### car storage capacity

- Concept Type: role
- Definition: number of rental cars that can be stored at the EU-Rent site that is the base for a branch
- Note: Some of the capacity at a branch's site might be taken up by cars that are not available for rental -- e.g., cars awaiting service or transfer to other branches; hotel guests' cars.

### city branch

- Concept Type: branch type
- Definition: branch that has an EU-Rent location and has moderate car storage and has long business hours
- Note: This kind of branch is usually in a city center and has small numbers of staff who are interchangeable in the workflow.
- Necessity: The concept 'city branch' is included in Branches by Type.

### country

- Source: MWU (1,2b) ["country"]
- Note: Has pre-defined population (below)

### EU-Rent Logo

- Definition: upper-case 'EU' followed by a hyphen followed by upper-case 'R' followed by lower-case 'ent' all in the company's custom-designed font and using the company's standard color on a white ground

### EU-Rent operating company

- Definition: operating company of EU-Rent
- Synonym: operating company
- Note: In each operating country EU-Rent has an EU-Rent operating company that:
- adapts global policy to local regulation, custom, and practice
  - selects which car models will be purchased for each car group
  - sets rental tariffs
- Note: Has pre-defined population (below)

### EU-Rent operating company includes local area

- Synonymous Form: local area is included in EU-Rent operating company

### EU-Rent operating company operates in operating country

- Synonymous Form: operating company has operating country

### EU-Rent site

Concept Type: [role](#)

Definition: [location](#) *used by* [EU-Rent](#)

### EU-Rent site is base for rental organization unit

Synonymous Form: [rental organization unit](#) *is based at* [EU-Rent site](#)

### EU-Rent site is located in operating country

Synonymous Form: [operating country](#) *includes* [EU-Rent site](#)

Necessity: Each [EU-Rent site](#) *is located in* exactly one [operating country](#)

### European Union

Definition: the geopolitical area *that is composed of* [Sweden](#) and [Germany](#) and [Ireland](#) and [UK](#) and ...

### hours of operation

Definition: the times during which a facility is open for business

Example: 24 hours per day, 7 days a week; 7:00 am to 8:00 pm; on demand.

### insurer

Source: MWU ["insurer"]

### local area

Concept Type: [organization function](#)

Definition: [rental organization unit](#) *that has area responsibility*

Description: A [local area](#) contains a number of [branches](#) for [rental car](#) pick-up and return and a number of [service depots](#) that maintain and repair EU-Rent's [rental cars](#).

Necessity: [service depot](#) *is included in* [Organization Units by Function](#).

### local area includes service depot

Synonymous Form: [service depot](#) *is included in* [local area](#)

### local area is included in operating company

Concept Type: [partitive fact type](#)

Synonymous Form: [operating company](#) *includes* [local area](#)

Necessity: Each [local area](#) *is included in* exactly one [EU-Rent operating company](#).

### location

Source: MWU (1a) ["location"]

### name

Concept Type: [role](#)

General Concept: [text](#)

Source: MWU (1a) ["name"]

### operating company

See: [EU-Rent operating company](#)

operating company **has** insurer

### operating country

Concept Type: role  
Definition: country in which EU-Rent does business  
Necessity: **Each** operating country **has exactly one** currency

### organization function

Concept Type: categorization type  
Definition: concept **that specializes** the concept 'rental organization unit' and **that classifies** a rental organization unit by its functional role in EU-Rent

### Organization Units by Function

Definition: segmentation **that is for the** concept 'rental organization unit' and **subdivides** rental organization units based on organization function  
Necessity: Organization Units by Function **contains** the categories 'branch' and 'local area' and 'service depot'.

### rental organization unit

Concept Type: role  
Definition: organization unit that operates part of EU-Rent's car rental business

### rental organization unit **is based at** EU-Rent site

Concept Type: associative fact type  
Necessity: **Each** rental organization unit **is based at exactly one** EU-Rent site.

### service depot

Concept Type: organization function  
Definition: rental organization unit **that has servicing responsibility**  
Necessity: service depot **is included in** Organization Units by Function.

### service depot **is included in** local area

Concept Type: partitive fact type  
Necessity: **Each** service depot **is included in exactly one** local area.

### Scandinavia

Definition: **the** geographic area **that is composed of** Sweden and ...

#### E.2.2.1.3.1 Characteristics

### rental organization unit **having 24-7 operation**

Concept Type: characteristic  
Definition: **the** rental organization unit **has hours of operation that are** 24 hours per day, 7 days per week

### rental organization unit **having a EU-Rent location**

Concept Type: characteristic

Definition: the rental organization unit is based at an EU-Rent site that is owned by EU-Rent  
Note: Some things are based at EU-Rent sites that are owned by third parties such as hotels and travel agents.

#### rental organization unit *having area responsibility*

Concept Type: characteristic  
Definition: the rental organization unit includes organization units for which it has responsibility to coordinate operations and ensure resources

#### rental organization unit *having large car storage*

Concept Type: characteristic  
Definition: the rental organization unit has car storage that accommodates hundreds of rental cars

#### rental organization unit *having long business hours*

Concept Type: characteristic  
Definition: the rental organization unit has hours of operation that correspond to an extended business day  
Example: 7:00 am to 8:00 pm, six days per week.

#### rental organization unit *having minimal car storage*

Concept Type: characteristic  
Definition: the rental organization unit has car storage that can accommodate a small number of rental cars

#### rental organization unit *having moderate car storage*

Concept Type: characteristic  
Definition: the rental organization unit has car storage that can accommodate tens of rental cars

#### rental organization unit *having on-demand operation*

Concept Type: characteristic  
Definition: the rental organization unit has hours of operation that are flexible in response to customer demand

#### rental organization unit *having rental responsibility*

Concept Type: characteristic  
Definition: the rental organization unit is responsible for operation of customer-facing rental business

#### rental organization unit *having servicing responsibility*

Concept Type: characteristic  
Definition: the rental organization unit is responsible for maintenance and servicing of rental cars

*Pre-defined population:* country

#### Canada

Concept Type: individual concept

General Concept: [country](#)

### Germany

Concept Type: [individual concept](#)

General Concept: [country](#)

Synonym: [DE](#)

### Ireland

Concept Type: [individual concept](#)

General Concept: [country](#)

### Sweden

Concept Type: [individual concept](#)

General Concept: [country](#)

### Switzerland

Concept Type: [individual concept](#)

General Concept: [country](#)

Synonym: [CH](#)

### UK

Concept Type: [individual concept](#)

General Concept: [country](#)

Synonym: [United Kingdom](#)

### United States

Concept Type: [individual concept](#)

General Concept: [country](#)

Synonym: [USA](#)

**Pre-defined population:** [EU-Rent operating company](#)

### EU-Rent CA

Definition: [the EU-Rent operating company that is located in Canada](#)

### EU-Rent DE

Definition: [the EU-Rent operating company that is located in Germany](#)

### EU-Rent IE

Definition: [the EU-Rent operating company that is located in Ireland](#)

### EU-Rent UK

Definition: [the EU-Rent operating company that is located in UK](#)

### EU-Rent US

Definition: [the EU-Rent operating company that is located in United States](#)

E.2.2.1.4 Car Specifications

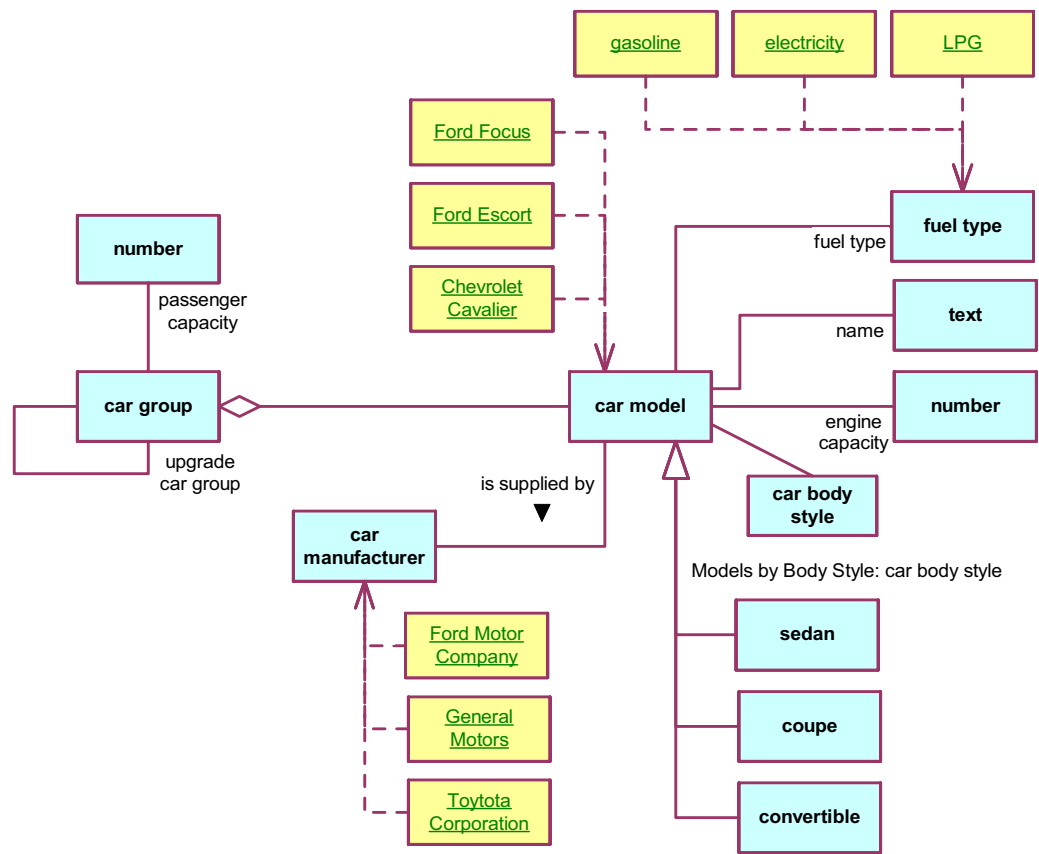


Figure E.6 - Car Specifications

car body style

Concept Type: categorization type  
Definition: concept that specializes the concept 'car model' and that classifies a car model based on industry-defined criteria  
Source: CRISG (2a) ["body style"]

car group

Source: CRISG ["rate group"]  
Note: Different models of car are offered for rental, organized into groups which establish a price point.  
Necessity: Each car model that is included in a car group is charged at the rental rates of the car group.

car group has passenger capacity

Concept Type: is-property-of fact type

Definition: [the car group has the passenger capacity that](#) defines the capacity of a [car](#) of [the car group](#), with [the driver](#) counting as [One](#)

### [car group has upgrade car group](#)

Definition: [the car group has an upgrade car group that](#) is used when no car of a [requested car group](#) is available

### [car manufacturer](#)

Definition: producer of cars that EU-Rent has decided to do business with

Note: Has pre-defined population (below)

### [car model](#)

Source: CRISG ["car model"]

Note: Has pre-defined population (below)

Note: Cars of a given model are all built to the same specification, e.g., body style, engine size, fuel type. EU-Rent bases its model names on those assigned by the car manufacturers, but sometimes has to extend them to distinguish models with different engine sizes and numbers of doors.

Reference Scheme: [name of car model](#)

### [car model is included in car group](#)

Synonymous Form: [car group includes car model](#)

Necessity: [Each car model is included in exactly one car group.](#)

### [car model has engine capacity](#)

Concept Type: [is-property-of fact type](#)

### [car manufacturer supplies car model](#)

Necessity: [Each car model is supplied by exactly one car manufacturer.](#)

### [car model has fuel type](#)

Concept Type: [is-property-of fact type](#)

Definition: Some car models can have more than one fuel – e.g., can switch between gasoline and LPG, or between electricity and gasoline.

Necessity: [Each car model has at least one fuel type.](#)

### [car model has name](#)

Concept Type: [is-property-of fact type](#)

### [convertible](#)

Concept Type: [car body style](#)

Source: CRISG ["convertible"]

Necessity: [convertible is included in Models by Body Style.](#)

### [coupe](#)

Concept Type: [car body style](#)

Source: CRISG ["coupe"]  
Necessity: coupe *is included in* Models by Body Style.

### engine capacity

Concept Type: role  
Definition: number *that* indicates the engine cylinder capacity in cubic centimeters  
Source: CRISG ["engine size"]

### fuel type

Source: CRISG ["fuel type"]  
Note: Has pre-defined population (below)

### Models by Body Style

Definition: segmentation *that is for the* concept 'car model' *and* subdivides car models based on car body style  
Necessity: Models by Body Style *contains the* categories 'convertible' and 'coupe' and 'sedan'.

### passenger capacity

Concept Type: role  
Definition: number that is the count of adults, including the driver, that the car can comfortably hold

### sedan

Concept Type: car body style  
Source: CRISG ["sedan"]  
Necessity: sedan *is included in* Models by Body Style.

### upgrade car group

Concept Type: role  
Definition: car group from which cars may be offered for rental if there are no cars available in another requested car group

***Pre-defined Population:*** car model

### Chevrolet Cavalier

Concept Type: individual concept  
General Concept: car model

### Ford Focus

Concept Type: individual concept  
General Concept: car model

### Ford Escort

Concept Type: individual concept  
General Concept: car model



**Pre-defined Population:** [car group](#)

#### **Economy**

Source: CRISG ["economy group"]  
General Concept: [car group](#)

#### **Compact**

Source: CRISG ["compact group"]  
General Concept: [car group](#)

#### **Intermediate**

Source: CRISG ["intermediate group"]  
General Concept: [car group](#)

#### **Full Size**

Source: CRISG ["fullsize group"]  
General Concept: [car group](#)

**Pre-defined Population:** [car manufacturer](#)

#### **Ford Motor Company**

Concept Type: [individual concept](#)  
General Concept: [car manufacturer](#)

#### **General Motors**

Concept Type: [individual concept](#)  
General Concept: [car manufacturer](#)

#### **Toyota Corporation**

Concept Type: [individual concept](#)  
General Concept: [car manufacturer](#)

**Pre-defined Population:** [fuel type](#)

#### **Electricity**

Concept Type: [individual concept](#)  
Source: CRISG ["electric fuel"]

#### **Gasoline**

Concept Type: [individual concept](#)  
Source: CRISG ["gasoline"]  
General Concept: [fuel type](#)  
Synonym: [petrol](#) [UK]  
Synonym: [benzin](#) [DE]  
Synonym: [essence](#) [FR]

#### **LPG**

Concept Type: [individual concept](#)

General Concept: [fuel type](#)  
Source: CRISG ["liquefied petroleum gas"]

### E.2.2.1.5 Rentals

There are some trade offs of redundancy and reuse (and, hence, a bigger vocabulary) against some simplification of formulation and expression.

Note: fact types derived from inclusion of [rental period](#) and [car movement](#) (e.g., [rental has pick-up branch](#)) are not shown on the diagram, but are defined in the text.

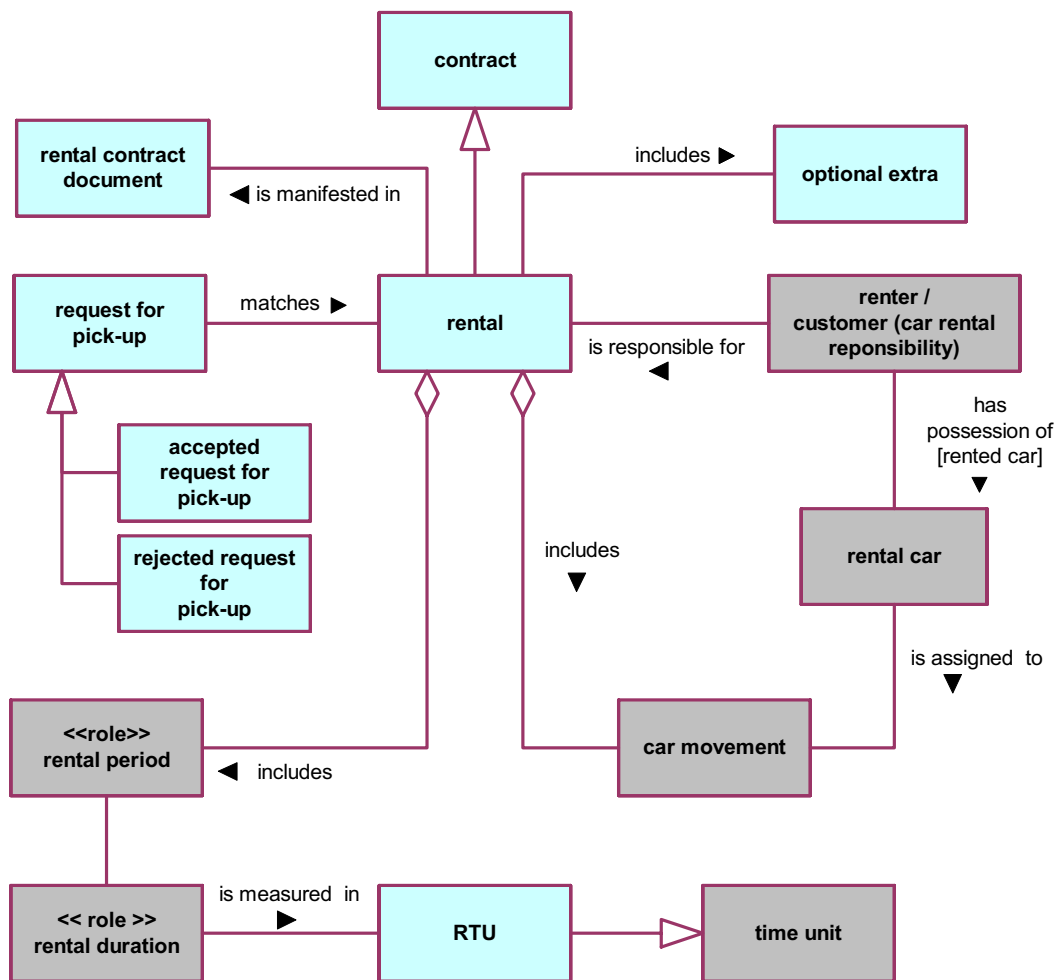


Figure E.7 - Rentals

#### [accepted request for pick-up](#)

Definition: [request for pick](#) up that is accepted by EU-Rent  
Necessity: The [request for pick-up](#) [matches](#) exactly one [rental](#).  
Necessity: The [renter](#) [presents](#) a [valid credit card](#).

Necessity: The [renter](#) *provides* [current contact details](#).  
Necessity: Each [driver](#) of the [rental](#) *has* a [valid driver license](#).

### actual pick-up date/ time

Concept Type: [role](#)  
General Concept: [date/time](#)  
Definition: [date/time](#) when the [rented car](#) of a [rental](#) is picked up by the [renter](#)

### actual return date/time

Concept Type: [role](#)  
General Concept: [date/time](#)  
Definition: [date/time](#) when a [rented car](#) is returned to EU-Rent

### current contact details

Concept Type: [role](#)  
Definition: [contact details](#) that have been confirmed as up-to-date by the [renter](#)

### optional extra

Definition: Item that may be added to a [rental](#) at extra charge if the [renter](#) so chooses  
Example: [One-way rental, fuel pre-payment, additional insurances, fittings \(child seats, satellite navigation system, ski rack\)](#)  
Source: CRISG ["optional extra"]

### pick-up branch

Concept Type: [role](#)  
General Concept: [branch](#)  
Necessity: The [pick-up branch](#) of a [rental](#) *is not changed*.  
Note: If the [renter](#) wishes to change the [pick-up branch](#) of a [rental](#), EU-Rent regards it as a cancellation and a new [rental](#).

### rejected request for pick-up

Definition: [request for pick](#) up that is rejected by EU-Rent

### rental

Definition: contract with a [renter](#) specifying use of [some car](#) of a [car group](#) for a [rental period](#) and a [car movement](#)  
Dictionary Basis: contract for use of a rental car by a renter for an agreed period under the rental company's terms and conditions for rental. [CRISG]

### rental contract document

Definition: information artifact that is the manifestation of a [rental](#)

### rental duration

Concept Type: [role](#)  
Definition: [duration](#) used to calculate a [rental charge](#)

### rental duration is measured in rental time unit

- Necessity: Each rental duration is measured in a whole number of rental time units.
- Example: A rental with an end date/time that was 11 days and 7 hours after its start date/time would have a rental duration of 1 x 1-week RTU plus 5 x 1-day RTU.  
If EU-Rent were to introduce a 3-day RTU, this would change to 1 x 1-week RTU plus 1 x 3-day RTU plus 2 x 1-day RTU.

### rental has actual pick-up date/time

- Definition: rental has actual pick-up date/time
- Necessity: A rental has an actual pick-up date/time if and only if the actual pick-up date/time is the start date/time of the rental period that is included in the rental.

### rental has actual return date/time

- Necessity: A rental has an actual return date/time if and only if the actual return date/time is the end date/time of the rental period that is included in the rental.

### rental has pick-up branch

- Necessity: A rental has a pick-up branch if and only if the pick-up branch is the sending branch of the car movement that is included in the rental.

### rental has rental duration

- Necessity: A rental has a rental duration if and only if the rental duration is the duration of the period that is the rental period that is included in the rental.

### rental has requested car group

- Necessity: A rental has a requested car group if and only if the requested car group is the car group that is specified in the car movement that is included in the rental.
- Possibility: The requested car group of an advance rental is changed before the actual pick-up date/time of the advance rental.
- Necessity: The requested car group of an advance rental is not changed after the actual pick-up date/time of the advance rental.

### rental has return branch

- Necessity: A rental has a return branch if and only if the return branch is the receiving branch of the car movement that is included in the rental.

### rental has scheduled pick-up date/time

- Necessity: A rental has a scheduled pick-up date/time if and only if the scheduled pick-up date/time is the scheduled start date/time of the rental period that is included in the rental.

### rental has scheduled return date/time

- Necessity: A rental has a scheduled return date/time if and only if the scheduled return date/time is the scheduled end date/time of the rental period that is included in the rental.

### rental includes car movement

- Concept Type: partitive fact type
- Synonymous Form: car movement is included in rental

Necessity: Each rental *includes* exactly one car movement  
Note: The car movement may be changed by changing the return branch.

### rental includes rental period

Concept Type: partitive fact type  
Synonymous Form: rental period is included in rental  
Necessity: Each rental *includes* exactly one rental period.  
Note: The rental period may be changed by rescheduling at the renter's request, by early or late arrival for rental, and by late return from rental.

### rental is manifested in rental contract document

Concept Type: associative fact type

### rental period

Concept Type: role  
Definition: variable period *that is included in a rental*

### rented car

Concept Type: role  
Definition: rental car *that is assigned a rental*

### rented car is assigned to rental

Synonymous Form: rental has rented car  
Necessity: A rented car *is assigned to a rental* if and only if the rented car *is the rental car that is assigned to the car movement that is included in the rental*.

### renter has possession of rented car

Definition: *the renter has the rented car for use on rental*  
Synonymous Form: rented car is in the possession of renter

### request for pick-up

Definition: request from a renter to pick up the rental car of a rental that has been reserved by him

### request for pick-up matches rental

Necessity: The rental *is assigned* (has a rental car assigned to it).  
Necessity: The pick-up branch of the rental is the branch at which the request is made.  
Necessity: The renter of the rental is the person making the request for pick-up.  
Necessity: The scheduled start date of the rental is the day of the request for pick-up.  
Note: This entry is partly informal in order to limit the case study size.

### requested car group

Concept Type: role  
Definition: car group that is requested for a rental  
Necessity: *At a given date/time each rental has exactly one requested car group*.

### return branch

Concept Type:	<a href="#">role</a>
Definition:	<a href="#">branch</a> stipulated in the <a href="#">rental contract</a> for return of the <a href="#">rented car</a>
Note:	If the renter does not return the car to the location of this branch, a penalty charge will be levied.
Necessity:	Each <a href="#">rental</a> <i>has exactly one</i> <a href="#">return branch</a> <i>at a given</i> <a href="#">date/time</a> .
Possibility:	The <a href="#">return branch</a> <i>of a rental</i> <i>is changed before the</i> <a href="#">actual return date/time of the rental</a> .

### scheduled pick-up date/time

Definition:	<a href="#">date/time</a> at which a <a href="#">rented car</a> is scheduled to be picked up from EU-Rent
Note:	<i>The possibilities and necessities for changing the</i> <a href="#">start date/time of variable period</a> <i>apply to</i> <a href="#">scheduled pick-up date/time of rental</a> .

### scheduled return date/time

Definition:	<a href="#">date/time</a> at which a <a href="#">rented car</a> is scheduled to be returned to EU-Rent
Note:	<i>The possibilities and necessities for changing the</i> <a href="#">end date/time of variable period</a> <i>apply to</i> <a href="#">scheduled return date/time</a> .

### valid credit card

Concept Type:	<a href="#">role</a>
Definition:	<a href="#">credit card</a> <i>that is acceptable for payment of the</i> <a href="#">rental charges of the rental</a> <i>for which it is presented</i>
Necessity:	The card is of a type that EU-Rent accepts.
Necessity:	“Expiry date” on the <a href="#">valid credit card</a> <i>is after the</i> <a href="#">scheduled end date/time of the rental</a> .
Necessity:	“Cardholder” is the person presenting the card.
Note:	This entry is informally defined in order to limit the case study size.

### valid driver license

Concept Type:	<a href="#">role</a>
Definition:	<a href="#">driver license</a> <i>that is acceptable for the</i> <a href="#">rental</a> <i>for which it is presented</i>
Necessity:	“Expiry date” on the <a href="#">valid driver license</a> <i>is after the</i> <a href="#">scheduled end date/time of the rental</a> .
Necessity:	“Driver” is the person presenting the license.
Necessity:	The rented car falls within “vehicle types.”
Necessity:	The license is legally acceptable in the country of the pick-up branch.
Note:	This entry is informally defined in order to limit the case study size.

#### **E.2.2.1.6 Rental Categorization**

This subclause defines some categorizations of rental, which enable some subsequent simplification of formulations and representations.

It also introduces the use of characteristic type for defining states - see [rental state](#) and [advance rental state](#).

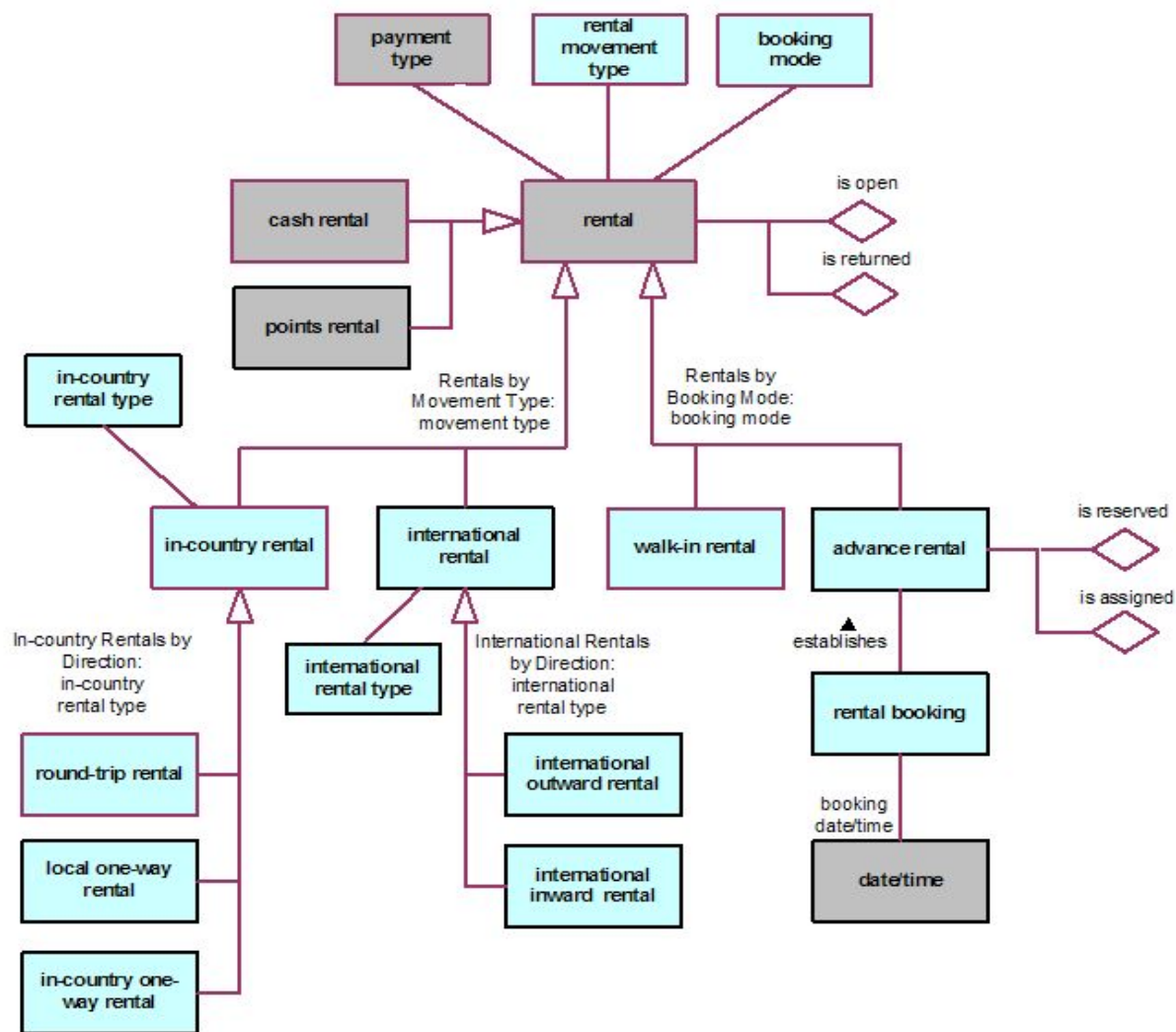


Figure E.8- Rental Categories

### advance rental

Concept Type:

booking mode

Definition:

rental that is contracted with EU-Rent on or earlier than the day before the scheduled pick-up date/time of the rental

Necessity:

Each advance rental specifies exactly one car group at a given date/time.

Possibility:

The car group specified for an advance rental is changed before the actual pick-up date/time of the advance rental.

Necessity:

The car group specified for an advance rental is not changed after the actual pick-up date/time of the advance rental.

Necessity:

The concept 'advance rental' is included in Rentals by Booking Mode.

### advance rental *is assigned*

Concept Type: advance rental state

Definition: advance rental *having* a car movement *that has an assigned* rented car *that has not yet been picked up*

### advance rental *is reserved*

Concept Type: advance rental state

Definition: advance rental *having* a car movement *that does not have an assigned* rented car

### advance rental state

Concept Type: characteristic type

### booking date/time

Concept Type: role

Definition: date/time when rental booking is accepted by EU-Rent

### booking mode

Concept Type: categorization type

Definition: concept *that specializes the concept* 'rental' *and that classifies a* rental *whether it is booked in advance or not*

### car model *is requested for rental*

Synonymous Form: rental *requests* car model

Necessity: *Each* rental *requests at most one* car model.

Possibility: *The* car model *specified for an* advance rental *is changed before the* actual pick-up date/time of the advance rental.

Necessity: *The* car model *specified for an* advance rental *is not changed after the* actual pick-up date/time of the advance rental.

### in-country one-way rental

Concept Type: rental movement type

Definition: one-way rental *that includes an* in-country car movement

Note: This type of rental is between branches in different local areas in the same country.

Necessity: *The* concept 'in-country one-way rental' *is included in* In-Country Rentals by Direction.

### in-country rental

General Concept: rental

### in-country rental type

Concept Type: categorization type

Definition: concept *that specializes the concept* 'in-country rental' *and that classifies an* in-country rental *based on whether it is* round trip, *within a* local area *or between* local areas *in the same* country



### In-country Rentals by Direction

- Definition: segmentation that is for the concept 'rental' and subdivides rentals based on movement type
- Necessity: In-Country Rentals by Direction contains the categories 'round-trip rental' and 'local one-way rental' and 'in-country one-way rental.'

### international rental

- Concept Type: rental movement type
- Definition: one-way rental that includes an international car movement
- Note: This type of rental is between branches in different countries.
- Necessity: The concept international rental is included in Rentals by Movement Type.

### international inward rental

- Concept Type: international rental type
- Definition: international rental that has country of the return branch of the rental that is the country of registration of the rented car of the rental

### International Rentals by Direction

- Definition: segmentation that is for international rental and subdivides rental based on international rental type
- Necessity: International Rentals by Direction contains the categories 'international inward rental' and 'international outward rental.'

### international outward rental

- Concept Type: international rental type
- Definition: international rental that has country of the pick-up branch of the rental that is the country of registration of the rented car of the rental

### international rental type

- Concept Type: categorization type
- Definition: concept that specializes the concept 'international rental' and that classifies an international rental based on whether its direction is to or from the country of registration of the rented car

### local one-way rental

- Concept Type: rental movement type
- Definition: one-way rental that includes a local car movement
- Note: This type of rental is between branches within a local area.
- Necessity: The concept local one-way rental is included in In-Country Rentals by Direction.

### one-way rental

- Concept Type: rental that includes a one-way car movement

### rental booking

- Source: CRISG ["reservation"]
- Synonym: reservation

Definition: acceptance by EU-Rent of a request from a [renter](#) for an [advance rental](#).  
 Note: The request informs EU-Rent of the [car group](#) required, the [scheduled pick-up date/time](#) and [scheduled return date/time](#), and the [pick-up branch](#) and [return branch](#), and provides details of the [renter](#).  
 Optionally, a specific [car model](#) within the required [car group](#) may be requested.

### **rental booking establishes advance rental**

Concept Type: [associative fact type](#)  
 Necessity: Each [advance rental](#) is established by exactly one [rental booking](#).

### **rental booking has booking date/time**

Concept Type: [is-property-of fact type](#)  
 Necessity: Each [rental booking](#) has exactly one [booking date/time](#).  
 Necessity: The [booking date/time](#) of the [rental booking](#) that establishes a [cash rental](#) is before the [scheduled pick-up date/time](#) of the [rental](#).  
 Necessity: The [booking date/time](#) of the [rental booking](#) that establishes a [points rental](#) is at least 5 days before the [scheduled pick-up date/time](#) of the [rental](#).

### **rental is open**

Concept Type: [rental state](#)  
 Definition: the [rental](#) has a [rented car](#) that is in possession of the [renter](#) and the [end date/time](#) of the [grace period](#) of the [rental](#) is in the future

### **rental is returned**

Concept Type: [rental state](#)  
 Definition: the [rented car](#) of the [rental](#) has been returned from rental to a [branch](#)

### **rental movement type**

Concept Type: [categorization type](#)  
 Definition: [concept](#) that specializes the [concept](#) 'rental' and that classifies a [rental](#) based on whether it is within a [country](#) or between [countries](#)

### **rental state**

Concept Type: [characteristic type](#)

### **Rentals by Booking Mode**

Definition: [segmentation](#) that is for the [concept](#) 'rental' and subdivides [rentals](#) based on [booking mode](#)  
 Necessity: [Rentals by Booking Mode](#) contains the [categories](#) 'advance rental' and 'walk-in rental.'

### **Rentals by Movement Type**

Definition: [segmentation](#) that is for the [concept](#) 'rental' and subdivides [rentals](#) based on [rental movement type](#)  
 Necessity: [Rentals by Movement Type](#) contains the [categories](#) 'in-country rental' and 'international rental.'

### reservation

Synonym:

rental booking

### round-trip rental

Concept Type:

rental movement type

Definition:

rental that includes a round-trip car movement

Note:

In this type of rental the pick-up branch is the return branch.

Necessity:

The concept round-trip rental is included in In-Country Rentals by Direction.

### walk-in rental

Concept Type:

booking mode

Definition:

rental that is contracted with EU-Rent on the day that the car is picked up

Necessity:

The concept walk-in rental is included in Rentals by Booking Mode.

### E.2.2.1.7 Rental Pricing

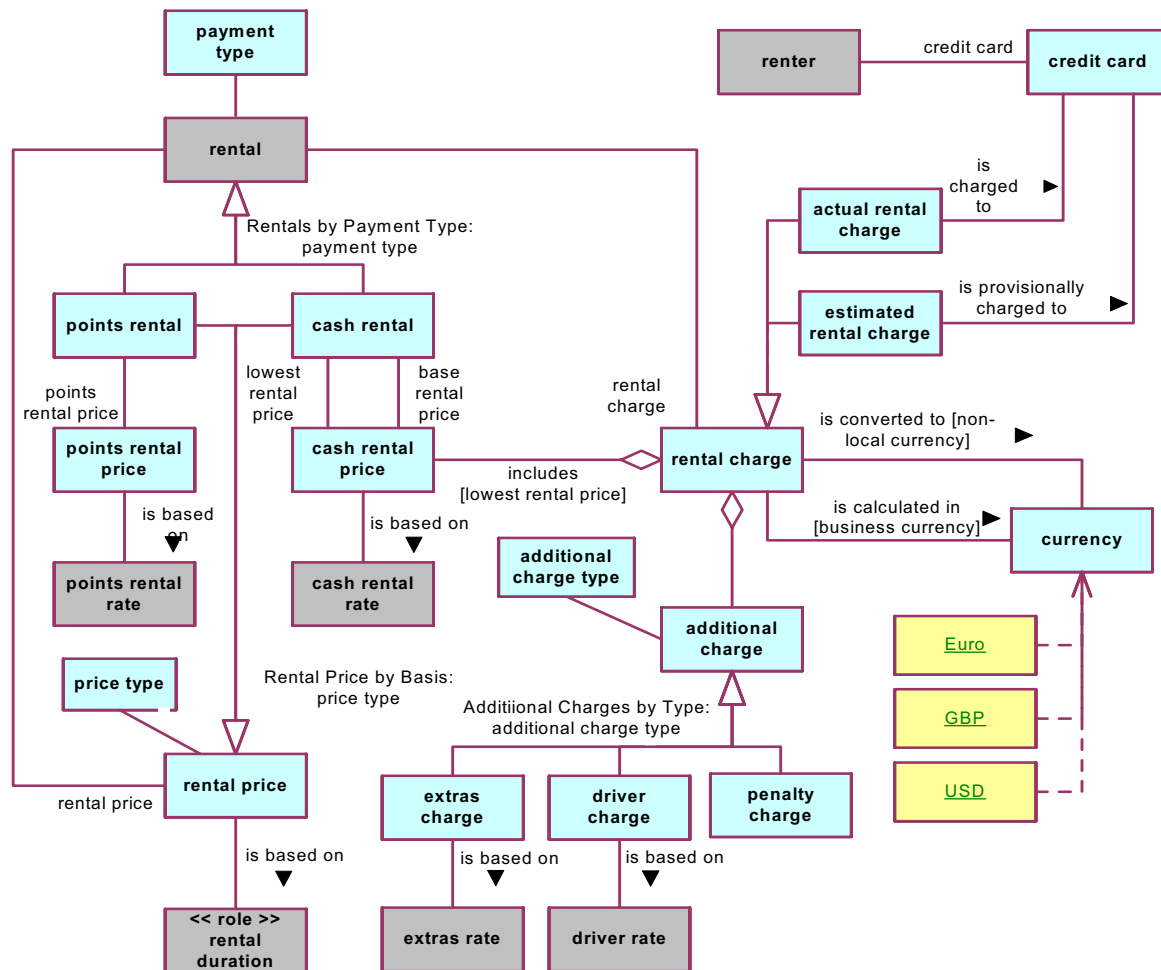


Figure E.9 - Rental Pricing

#### actual rental charge

Definition: rental charge that is calculated at end of rental

#### additional charge

Definition: charge included in rental charge in addition to lowest rental price

#### additional charge type

Concept Type: categorization type

Definition: concept that specializes the concept 'additional charge' and that classifies an additional charge based on why it was incurred - option selected by the renter, additional driver, or penalty charge

### additional charge is included in rental charge

#### Additional Charges by Charge Type

- Definition: segmentation that is for the concept 'additional charge' and subdivides additional charges using additional charge type
- Necessity: Additional Charges by Basis contains the categories 'extras charge' and 'driver charge' and 'penalty charge.'

### base rental price

- Concept Type: role
- Definition: price charged for the use of the rented car of a rental, before any additional charges are added
- Description: The base rental price is the sum of the rental rates for the requested car model for the RTUs (rental time units) that make up the rental duration. The base rental price can be calculated in money or loyalty club points.  
The rental duration is broken down into integral numbers of RTUs, working from the largest RTU towards the smallest (see example).
- Necessity: If the rental duration is not for an exact number of days, the final part-day is charged as a Rental Day.
- Note: Hourly tariff lines are used only for calculating late charges.
- Example: A 10-day rental is broken down into four rental time units: 1 x week + 3 x 1-day. The base rental price is the sum of the prices for the four RTUs.

### base rental price is based on rental duration

#### business currency

- Concept Type: role
- Definition: currency in which EU-Rent undertakes financial transactions
- Description: currency of an operating country.

### cash rental

- Concept Type: payment basis
- Definition: rental that is charged in money
- Necessity: The concept cash rental is included in Rentals by Payment Type.

### cash rental has base rental price

#### cash rental price

- Concept Type: price type
- Definition: base rental price that is in money
- Necessity: The concept cash rental price is included in Rental Prices by Basis.

### cash rental price is based on cash rental rate

- Necessity: Each cash rental price is based on exactly one cash rental rate.

### cash rental honors lowest rental price

- Necessity: Each cash rental honors exactly one lowest rental price.

Necessity: The lowest rental price of a rental is honored after the booking date/time of the booking that establishes the rental.

Necessity: The lowest rental price of a rental is honored before the actual return date/time of the rental.

### charge

Source: MWU 5b1 ["charge"]

### credit card

Dictionary Basis: MWU, 1: a small card (as one issued by hotels, restaurants, stores, or petroleum companies) authorizing the person or company named or its agent to charge goods or services

### currency

Source: MWU 2a ["currency"]

Note: Has predefined population (see below)

### driver charge

Concept Type: additional charge type

Definition: additional charge that is for additional drivers authorized for a rental

Necessity: The concept drivers charge is included in Additional Charges by Basis

### driver charge is based on driver rate

### estimated rental charge

Definition: rental charge estimated at start of rental

### estimated rental charge is provisionally charged to credit card

### extras charge

Concept Type: additional charge type

Definition: additional charge that is for optional extra

Necessity: The concept extras charge is included in Additional Charges by Basis

### extras charge is based on extras rate

### lowest rental price

Concept Type: role

Definition: cash rental price that is most favorable to the renter of a cash rental

Description: Between the booking date/time of a rental and its actual return date/time, pricing changes (e.g., tariff changes, discounts, promotions) may occur.  
The lowest rental price is the most favorable price for the renter that results from any such changes.  
Honoring the lowest rental price applies only while the car group and duration of the rental remain unchanged.

Necessity: A cash rental price of a rental that is calculated because of EU-Rent price changes and that is less than the lowest rental price of the rental replaces the lowest rental price of the rental.

Necessity: A cash rental price of a rental that is calculated because of changes to the car group or rental duration of the rental replaces the lowest rental price of the rental.

Necessity: The lowest rental price of a rental is not replaced after the actual return date/time of the rental.

### lowest rental price is included in rental charge

#### non-local currency

Concept Type: role

Definition: currency that is not the currency of a rental

#### payment type

Concept Type: categorization type

Definition: concept that specializes the concept 'rental' and that classifies a rental based on whether it is paid for by credit card or loyalty club points

#### penalty charge

Concept Type: additional charge type

Definition: additional charge that is for non-compliance with the terms of a rental

Necessity: The concept penalty charge is included in Additional Charges by Basis

#### points rental

Concept Type: payment basis

Definition: rental that is charged in loyalty club points

Necessity: Each points rental has a points rental price.

Necessity: The renter of each points rental is a club member.

Necessity: The concept points rental is included in Rentals by Payment Type.

#### points rental price

Concept Type: price type

Definition: base rental price that is in loyalty club points

Necessity: The concept points rental price is included in Rental Prices by Basis.

### points rental price is based on points rental rate

#### price

Source: MWU (1) ["price"]

#### price type

Concept Type: categorization type

Definition: concept that specializes the concept 'base rental price' and that classifies a base rental price based on whether it is calculated in money or loyalty club points

#### rental charge

Concept Type: role

Definition: charge that is the total amount estimated or charged for a rental

### rental has business currency

Necessity: A rental has a business currency if and only if the business currency is the currency of the operating country of the operating company that includes the local area that includes the pick-up branch of the rental.

### rental has rental charge

#### rental charge is calculated in business currency

Necessity: Each rental charge of each rental is calculated in the business currency of the rental.

#### rental charge is converted to non-local currency

Description: If a renter requests it, the rental charge for a rental can be shown on the contract and/or the invoice in a currency other than the currency in which it is calculated. This is done by converting the rental charge to the non-local currency.

### Rental Prices by Basis

Definition: segmentation that is for the concept 'base rental price' and subdivides base rental prices based on price type

Necessity: Rentals by Payment Type contains the categories 'cash rental price' and 'points rental price.'

### Rentals by Payment Type

Definition: segmentation that is for the concept 'rental' and subdivides rentals based on payment basis

Necessity: Rentals by Payment Type contains the categories 'cash rental' and 'points rental.'

### renter has credit card

#### **E.2.2.1.7.1 Pre-defined Population: currency**

##### Euro

Concept Type: individual concept

General Concept: currency

Synonym: EUR

##### GBP

Concept Type: individual concept

General Concept: currency

Synonym: British Pound

##### USD

Concept Type: individual concept

General Concept: currency

Synonym: United States Dollar

#### **E.2.2.1.8 Tariff**

To keep the EU-Rent case study to a manageable size, the relationship of tariff to operating country has been greatly simplified. In reality there would be a standard tariff structure, replicated for each operating country and each populated with a



different set of values. This is a data design issue, and not much is lost from the illustration of concepts and vocabulary by omitting it.

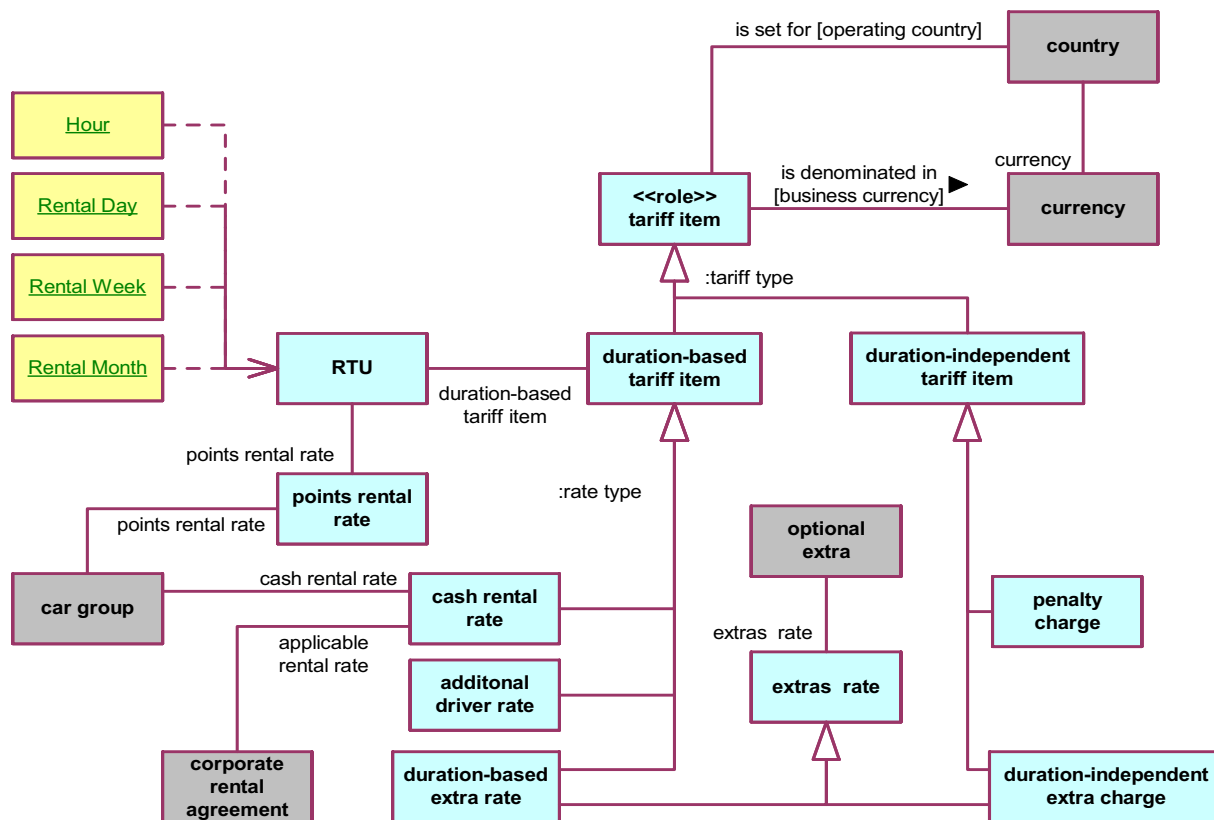


Figure E.10- Rental Tariffs

### additional driver rate

Concept Type: [rate type](#)

Definition: [duration-based tariff item](#) that is for each [additional driver](#) of a [rental](#)

### applicable rental rate

Concept Type: [role](#)

Definition: [cash rental rate](#) that is *applicable to a corporate rental agreement*

### cash rental rate

Concept Type: [rate type](#)

Definition: [duration-based tariff item](#) that is for rental of a car of a given [car group](#)

cash rental rate *is for* car group

corporate rental agreement *has* applicable rental rate

country *has* currency

duration-based extra rate

Concept Type: rate type

Definition: duration-based tariff item *that is for an optional extra*

duration-based tariff item

Concept Type: tariff type

Definition: tariff item *that* is charged to a rental per RTU in the duration of the rental

Example: daily cash rental rate for car group, daily cost of child seat.

duration-independent extra charge

Definition: duration-independent tariff item *that is for an optional extra*

duration-independent tariff item

Concept Type: tariff type

Definition: tariff item *that* is the basis for a charge to a rental regardless of the duration of the rental

Example: charge for fuel consumed; charge for one-way rental

Note: The tariff item may be the basis for calculation rather than a fixed amount. For example, a charge for fuel is calculated per liter or per gallon.

extras rate

Definition: generalization of duration-dependent extra charge and duration-independent extra charge

extras rate *is for* optional extra

penalty charge

Definition: duration-independent tariff item *that* is a penalty charge for some breach of the conditions of a rental

points rental rate

Concept Type: role

Definition: number *that* represents the loyalty club points charged per RTU to rent a car of a given car group

points rental rate *is for* car group

points rental rate *is for* RTU

rate type

Concept Type: categorization type

Definition: concept *that specializes the concept 'duration-based tariff item' and that classifies a duration-based tariff item* based on what type of service is being charged for

### rental time unit

See: [RTU](#)

### RTU

Definition: time unit that is an atomic (integer) unit of time for which a car can be rented  
Synonym: [rental time unit](#)  
Dictionary Basis: [CRISG](#) ["RTU"]  
Note: Has pre-defined population - see below.

### RTU has duration-based tariff item

### RTU has points rental rate

Synonymous Form: [points rental rate](#) *is for* [RTU](#)

### tariff item

Concept Type: [role](#)  
Definition: [number](#) that represents the price in some [business currency](#) of some element of a [rental](#)  
Source: [MWU 2b](#) ["tariff"]  
Example: weekly rate for a car of a given car group; cost of additional insurance; penalty charge for drop-off at location other than the return branch  
Note: This entry is informally defined in order to limit the case study size. In a 'real' SBVR model, tariff items would have validity periods, and would include special offers that would override standard rates for limited periods.

### tariff item is denominated in business currency

### tariff item is set for operating country

### tariff type

Concept Type: [categorization type](#)  
Definition: [concept](#) that specializes the concept 'tariff item' and that classifies a [tariff item](#) based on whether it is a per-RTU change or not

### *Predefined Population -* [RTU](#)

### Hour

Definition: "the 24th part of a mean solar day : 60 minutes of mean solar time"  
General Concept: [RTU](#)  
Source: [MWU 2b](#) ["hour"]

### Rental Day

Definition: 24-hour period, starting at actual pick-up time of rental  
Note: Not the scheduled pick-up date/time  
General Concept: [RTU](#)  
Example: Day beginning at 3:45 p.m.

### Rental Week

Definition: 7 consecutive rental days

General Concept: RTU

### Rental Month

Definition: 28 consecutive rental days

General Concept: RTU

## E.2.2.1.9 Rental Problems

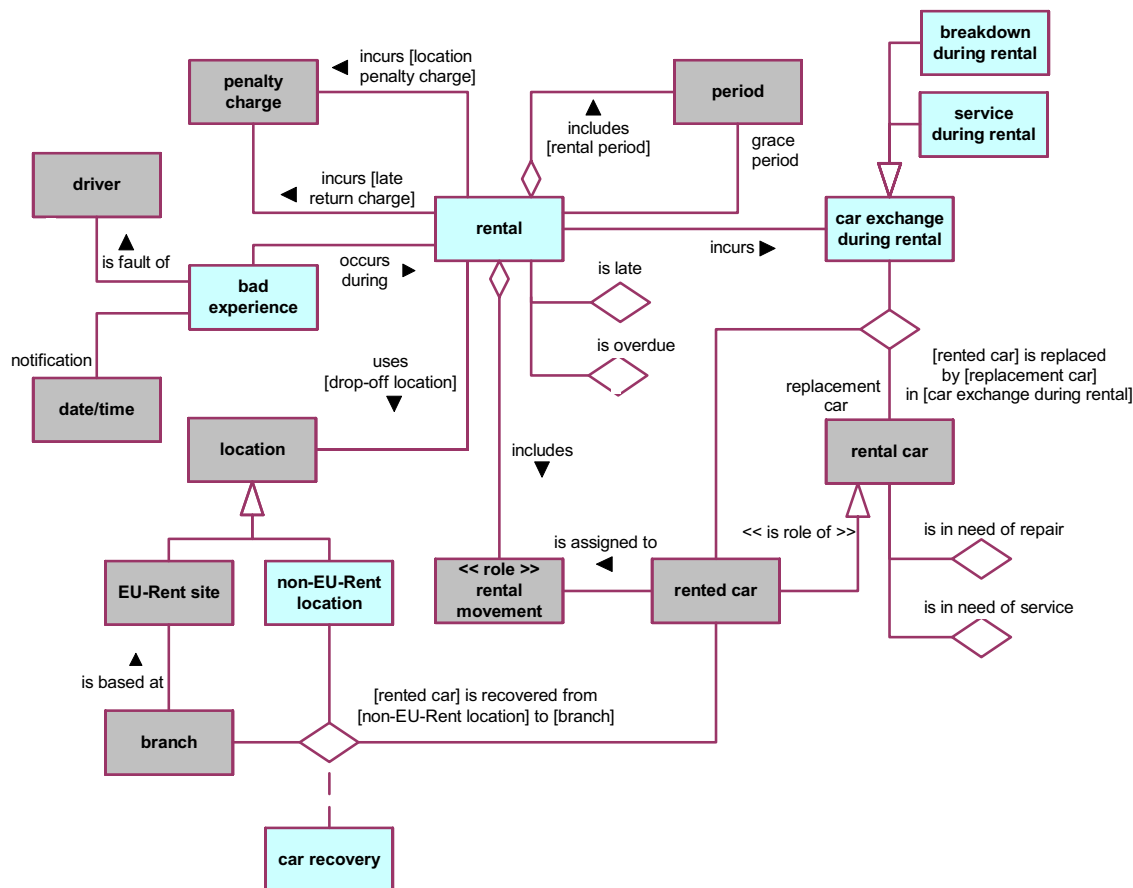


Figure E.11- Rental Problems

### actual return branch

See: drop-off branch

### bad experience

Definition: undesirable occurrence during a rental that is the fault of one of the drivers

Example: Speeding offence, unpaid parking fine, damage to car caused by careless driving.

Note: This entry is informally defined in order to limit the case study size.

**bad experience *has* notification date/time**

**bad experience *is* fault of driver**

**bad experience *occurs during* rental**

**breakdown during rental**

Definition: car exchange during rental *of* a rented car *that* has operational problems

**car exchange during rental**

Definition: situation where the rented car *of* a rental cannot be used for the remainder of the rental duration

**car recovery**

Definition: actuality *that* a given rented car *is recovered from* a given non-EU-Rent site *to* a given branch

**charge**

Source: CRISG ["charge"]

**drop-off branch**

Concept Type: role

Definition: branch to which a rented car is actually returned

Note: A car may be returned to a branch other than the one agreed in the rental. EU-Rent will accept the car, but will charge a location penalty.

Synonym: actual return branch

**drop-off location**

Concept Type: role

Definition: location where *the* rented car *of* a rental is dropped off

**grace period**

Concept Type: role

Definition: period *that* *has* start date/time *that* *is* scheduled end date/time *of* rental period *and* end date/time *that* *is the earlier of* (scheduled end date/time *of* rental period *plus* one hour, closing time *of* return branch *of* rental)

**late return charge**

Concept Type: role

Definition: penalty charge *that* *is made for* a rental *that* *is* late

Description: The late charge is calculated using the hourly tariff for the car group to which the car belongs, for durations of up to 5 hours after the end of the grace period. Part-hours are rounded up. The daily tariff is used for durations between 5 and 24 hours.  
If, after the end of the grace period, the renter contacts EU-Rent to extend the rental, the late return charge is calculated from the end of the grace period to the date/time when the rental extension is agreed.

Note: If the car is not returned within 48 hours after the end of the grace period, and the renter has not contacted EU-Rent to extend the rental, the insurance lapses and EU-Rent will report the car to the police as stolen and uninsured.

### **location penalty charge**

Concept Type: role  
Definition: penalty charge that is made for each rental that has a drop-off location that is not the EU-Rent site of the return branch of the rental  
Description: The location penalty charge is calculated in three parts: a fixed penalty; cost of retrieving the car if the location is a non-EU-Rent site (e.g., an airport car park); cost of moving the car to the return branch specified in the rental. Car movement costs are taken from a standard scale based on the distance between branches and per-mile (or per-kilometer) costs for car groups.

### **non-EU-Rent location**

Concept Type: role  
Definition: location that is not the location of a rental organization unit

### **notification date/time**

Concept Type: role  
Definition: date/time at which something is notified to EU-Rent

### **rental is late**

Concept Type: rental state  
Definition: rental having a rented car that is in possession of the renter and the end date/time of the grace period of the rental is in the past and is less than 24 hours in the past

### **rental is overdue**

Concept Type: rental state  
Definition: rental having a rented car that is in possession of the renter and the end date/time of the grace period of the rental is more than 24 hours in the past

### **rental car is in need of repair**

Concept Type: rental state  
Definition: rental car having damage or breakdown that renders it unusable for rental

### **rental car is in need of service**

Concept Type: rental state  
Definition: rental car having service reading that is at least 5000 miles.

### **rental car state**

Concept Type: characteristic type

### **rental has drop-off branch**

Necessity: A rented car has a drop-off branch if and only if the drop-off branch is the branch that is based at the EU-Rent site that is the drop-off location of the rental.

rental *incurs* car exchange during rental

rental *incurs* late return charge

rental *incurs* location penalty charge

rental *has* grace period

Note: late return charges are not applied until after the grace period.

rental *has* drop-off location

rented car *is recovered from* non-EU-Rent location to branch

rented car *is replaced by* replacement car in car exchange during rental

replacement car

Concept Type: role

Definition: rental car *in* a car exchange during rental *that* is used after the exchange

service exchange

Definition: car exchange during rental *of* a rented car *that is due for service*

unauthorized drop-off location

Definition: location *that is used to drop off the* rented car *of* a rental *and that is not the* EU-Rent site of the return branch of the rental

### E.2.2.1.10 Rental Cars

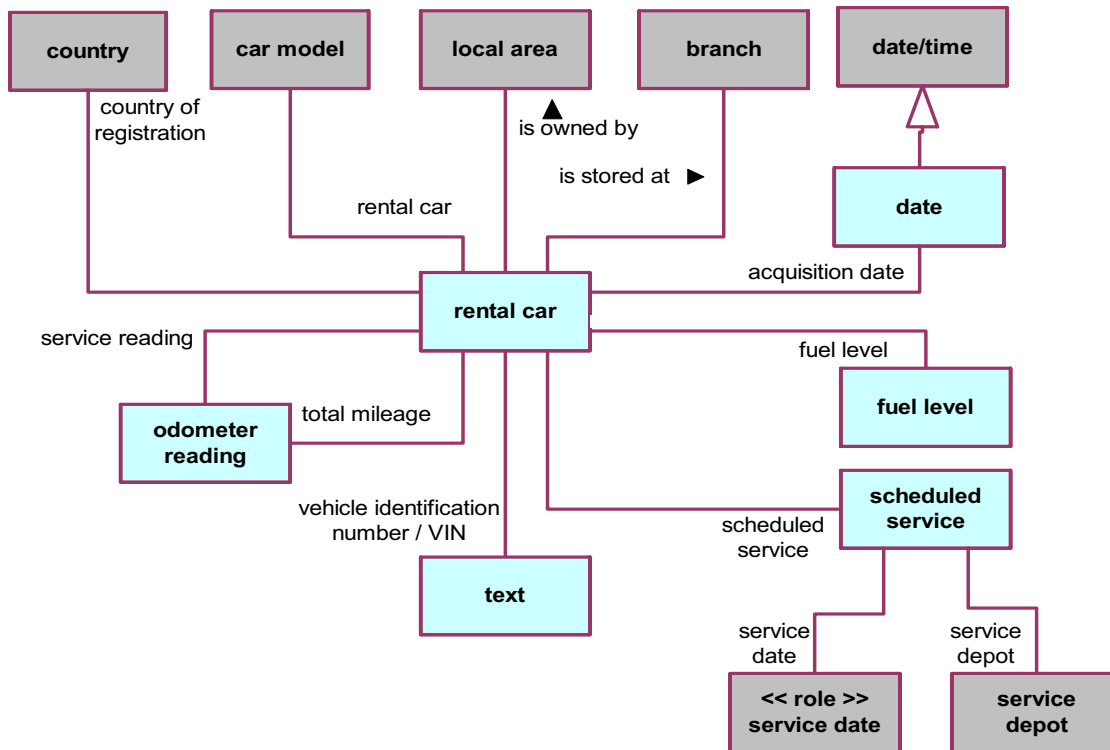


Figure E.12 - Rental Cars

#### acquisition date

Concept Type: [role](#)

Definition: [date](#) on which EU-Rent took ownership of some thing

#### car

See: [rental car](#)

#### country of registration

Concept Type: [role](#)

Definition: [country](#) in which something is registered with the relevant authorities

#### fuel level

Definition: [full](#) or [7/8](#) or [3/4](#) or [5/8](#) or [1/2](#) or [3/8](#) or [1/4](#) or [1/8](#) or [empty](#)

Source: CRISG ["fuel level"]



### odometer reading

Concept Type: [role](#)  
General Concept: [number](#)  
Source: CRISG ["odometer reading"]

### rental car

Source: MWU (1/1d) ["car"], CRISG ("rental car")  
Definition: vehicle owned by EU-Rent and rented to its customers  
Synonym: [car](#)

### rental car has acquisition date

Concept Type: [is-property-of fact type](#)  
Synonymous Form: [rental car is acquired on acquisition date](#)

### rental car has country of registration

Concept Type: [is-property-of fact type](#)

### rental car has odometer reading

Concept Type: [is-property-of fact type](#)

### rental car has scheduled service

### rental car has service reading

Concept Type: [is-property-of fact type](#)

### rental car has vehicle identification number

Concept Type: [is-property-of fact type](#)  
Necessity: Each [rental car](#) *has* exactly one [vehicle identification number](#).

### rental car has fuel level

Definition: [is-property-of fact type](#)

### rental car is of car model

Concept Type: [is-property-of fact type](#)  
Necessity: Each [rental car](#) *is of* exactly one [car model](#).

### rental car is of car group

Concept Type: [associative fact type](#)  
Necessity: A [rental car](#) *is of* a [car group](#) if and only if the [rental car](#) *is of* some [car model](#) that *is included in* the [car group](#).

### local area owns rental car

Necessity: Each [rental car](#) *is owned by* exactly one [local area](#).

### rental car is stored at branch

Necessity: Each [rental car](#) *is stored at* at most one [branch](#).

### scheduled service

Definition: maintenance service *for a rental car that is scheduled at a* (EU-Rent) service depot

### service date

General Concept: role

Definition: date of scheduled service

scheduled service *has* service date

scheduled service *has* service depot

### service reading

Concept Type: role

Definition: odometer reading since the car was last serviced

Note: When the service reading reaches 5000 miles (8000 km), the car will be scheduled for service.

### vehicle identification number

Concept Type: role

Definition: text that is the unique identifier of a particular vehicle

Synonym: VIN

### VIN

Synonym: vehicle identification number

### E.2.2.1.11 Customers

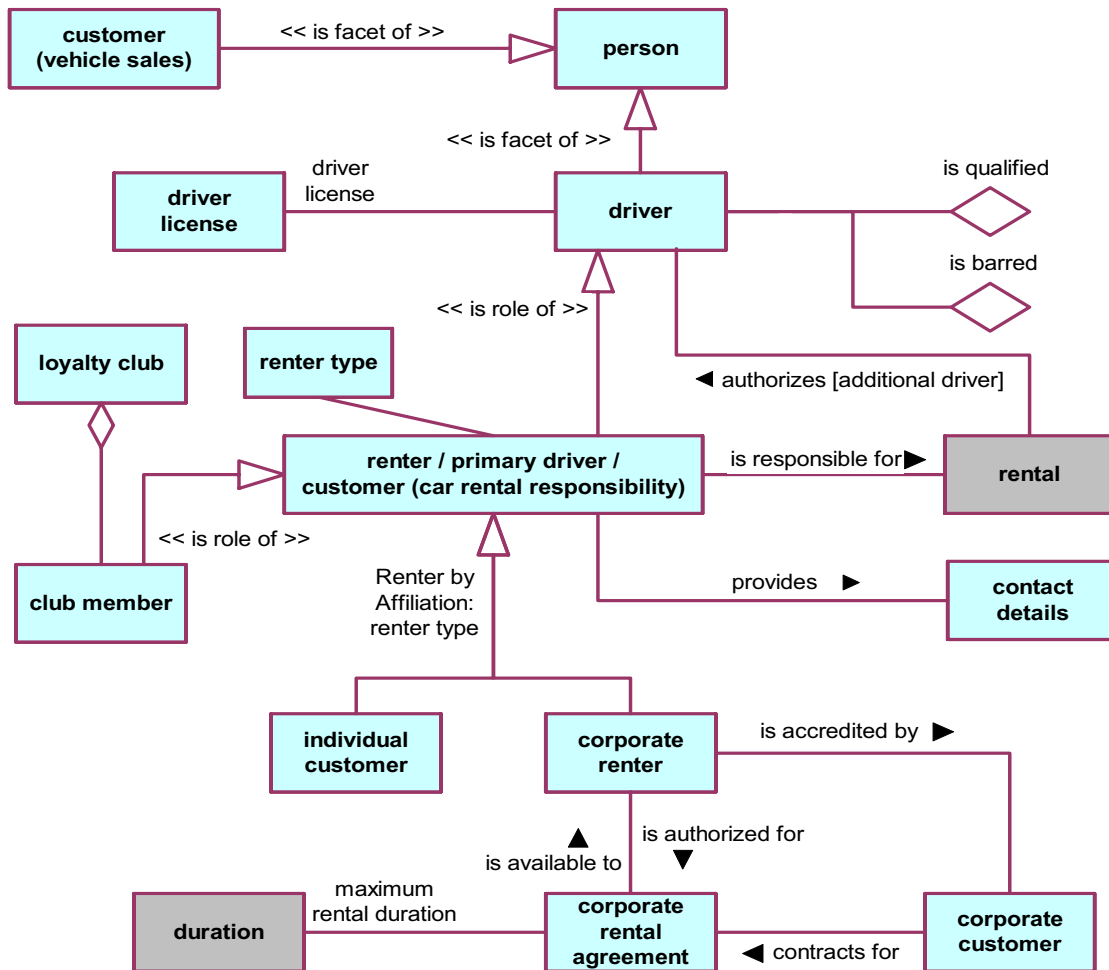


Figure E.13 - Customers

#### additional driver

Source: CRISG ["additional driver"]

Concept Type: role

Definition: driver of a rental who is not the renter of the rental

#### additional driver is authorized in rental

Necessity: Each rental authorizes at most 3 additional drivers.

Synonymous Form: rental authorizes additional driver

### Car Rental Responsibility

Source: CRISG ["rental responsibility"]  
General Concept: [subject field](#)

### club member

Definition: [renter](#) who has joined EU-Rent's [loyalty club](#)

### contact details

Definition: address, telephone number, and (if available) email address

### corporate customer

Dictionary Basis: relating or belonging to a corporation MWU ["corporate"]  
Dictionary Basis: person or company who buys goods and services MWU ["customer"]

### corporate customer contracts for corporate rental agreement

### corporate rental agreement

Definition: [contract](#) under which a [corporate renter](#) can rent a car at a negotiated set of rates  
Note: Each rental under a corporate rental contract is an individual contract, and the corporate renter is personally responsible for it.  
Note: This entry is informally defined in order to limit the case study size.

### corporate rental agreement has maximum rental duration

### corporate renter

Concept Type: [renter type](#)  
Definition: [renter](#) who is a representative of a [corporate customer](#), accredited to rent cars under the terms of its [corporate rental agreement](#), who has booked at least one [rental](#)  
Necessity: Each [corporate renter](#) is a person who is accredited by a [corporate customer](#) and who is responsible for at least one [rental](#).  
Necessity: The concept [corporate renter](#) is included in [Renters by Affiliation](#)

### corporate renter is accredited by corporate customer

### corporate renter is authorized for corporate rental agreement

Synonymous Form: [corporate rental agreement is available to corporate renter](#)  
Necessity: Each [corporate renter](#) is authorized for at least one [corporate rental agreement](#).

### customer

Subject Field: [Car Rental Responsibility](#)  
Concept Type: [role](#)  
See: [renter](#)

### customer

Subject Field: [Vehicle Sales](#)  
Concept Type: [facet](#)

Definition: person who purchases a rental car from EU-Rent at the end of its rental life

### driver

Concept Type: facet

Definition: person who has been identified as one who can drive **the** rented car of a rental

### driver is barred

Concept Type: driver state

Definition: driver *being prohibited from renting a car from EU-Rent*

Note: A barred driver is a person known to EU-Rent as a driver (either a renter or an additional driver), who has **at least 3** bad experiences.

### driver is qualified

Concept Type: driver state

Definition: **the** driver is over 21 years old **and has a** valid driver license **and is not** under any pending legal action that could adversely affect his driver's license or insurability.

### driver has driver license

### driver license

Source: CRISG ["driver license"]

### driver state

Concept Type: characteristic type

### individual customer

Concept Type: renter type

Definition: renter who is not a corporate renter, who meets at least one of the following criteria: has completed a rental within the last 5 years; has a rental currently in progress; has made a rental booking

Necessity: **Each** individual customer **is a given** person **who is not a** corporate renter **and who is responsible for at least one** rental **that is a** Reserved Rental **or an** Assigned Rental **or an** Open Rental **or a** Returned Rental **that has an** end date **that is less than** 5 years earlier than the current day date.

Necessity: **The** concept individual customer **is included in** Renters by Affiliation.

### loyalty club

Definition: EU-Rent's incentive scheme for its frequent renters

Note: A customer who joins the loyalty club accumulates points that s/he can use to pay for a rental.

### loyalty club includes club member

Concept Type: partitive fact type

### maximum rental duration

Concept Type: role

Definition: [duration](#) **that** is the upper limit for [rental duration of each rental](#) made under the terms of **a corporate rental agreement**

### person

Source: MWU (1a) ["person"]

### primary driver

See: [renter](#)

### rental has driver

Necessity: **A rental has a driver if and only if the driver is the renter that is responsible for the rental or an additional driver that is authorized in the rental.**

### renter

Source: CRISG ["renter"]

Concept Type: [role](#)

Definition: [driver](#) contractually responsible for a [rental](#)

Synonym: [customer](#) ([car rental responsibility](#))

Synonym: [primary driver](#)

### renter is responsible for rental

Concept Type: [associative fact type](#)

Synonymous Form: [rental has renter](#)

Necessity: **Each rental has exactly one renter.**

Necessity: **The renter of a rental is not changed.**

Note: If the renter wishes to change the [rental](#) to a different [renter](#), EU-Rent regards it as a cancellation and a new [rental](#).

### renter provides current contact details

### renter type

Concept Type: [categorization type](#)

Definition: [concept](#) **that specializes the concept 'renter' and that classifies a rental** based on whether it is an individual customer or a corporate renter

### Renters by Affiliation

Definition: [segmentation](#) **that is for the concept 'renter' and subdivides renters** based on [renter type](#)

Necessity: Renters by Affiliation **contains the categories 'individual customer' and 'corporate renter.'**

### Vehicle Sales

Source: CRISG ["car sales"]

General Concept: [subject field](#)