IMPLEMENTING PART IN CPR BROKER

Design specification

MAGENTA aps

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1 INTRODUCTION

The CPR Broker is an implementation of the PART Standard.

The CPR Broker can be employed in organizations that make use of CPR.

The interface defined in the PART standard enable the organizations to use the same interface to access CPR from several sources. It allows suppliers of solutions to base their products on a single interface that can be used by many organizations.

The CPR Broker holds CPR data. This ensures better performance, less latency, and more reliability. I many cases It will also results in cost-savings for the organizations, depending of the contracts they have with providers of CPR data.

The CPR broker is also able to provide more information than is available from existing providers because it keeps more historical data, such as bi-temporal registrations and because organizations will be able to provide CPR data directly to the broker without being restricted to policies and technical limitations of external providers.

There are three kinds of interfaces

1.1 PART Interface

This interface is specified by the PART standard. It is used by applications inside organizations that need CPR data.

This interface is read-only for CPR data, but it does allow applications to change the state of the broker.

There is a special method called RefreshRead that forces the broker to get fresh data from its ecternal data sources.

1.2 Subscription interface

It also covers subscriptions to events and notification of events. I.e allowing a service to register itself to receive notifications when all or a specified subset of person reach a given age.

1.3 Events Interface

Internal interface used for communication between Cpr Broker and Event Broker

1.4 Data Provider Interfaces

The interfaces towards the existing external providers of CPR data are not standardized yet.

That is one of the motivations to use the CPR Broker in an organization. Therefore the CPR Broker have implemented adapters for some existing providers. In this version DPR and KMD is supported. Internally in the CPR Broker, Data Providers are represented by adapter objects, providing a common interface, to simplify addition of more data providers.

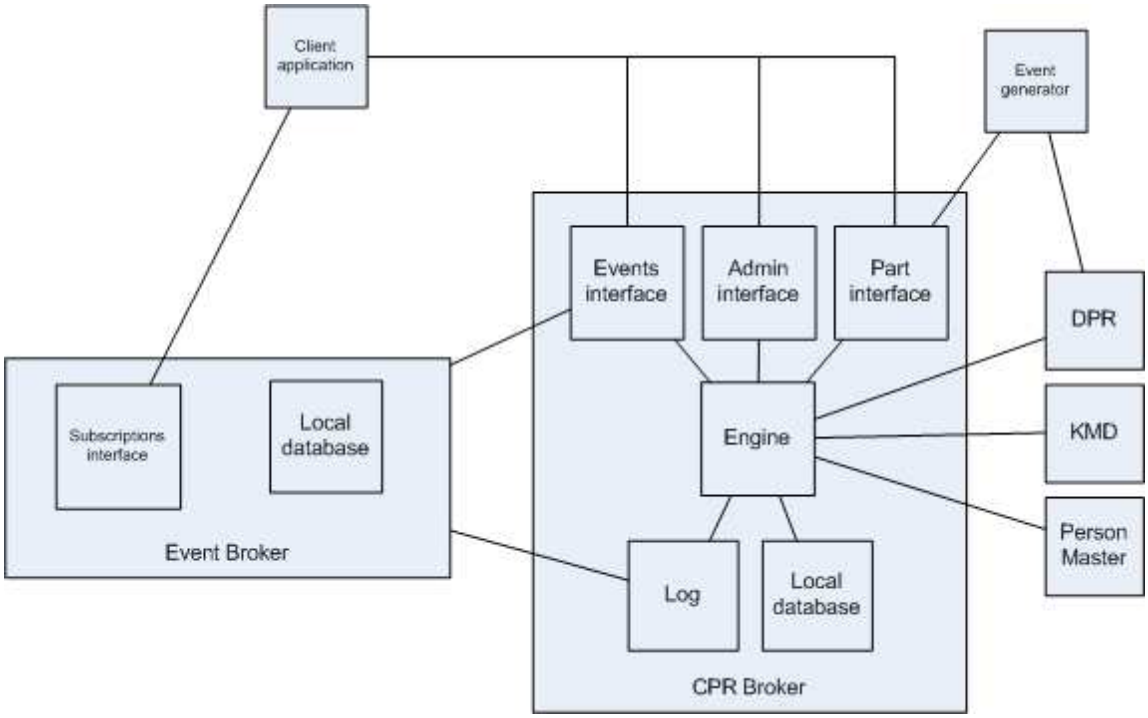
1.4.1 Using PersonMaster to create UUID's for persons

PART make use of UUID's to identify persons. The CPR Broker as well as other applications based on PART will be deployed in many organizations and must be able to exchange information about persons. Therefore a CPR broker installation cannot assign its own UUID's to persons. Gentofte Municipality have developed a service, PersonMaster that can assign UUIDs to persons and provide UUIDs of persons based on current CPR numbers.

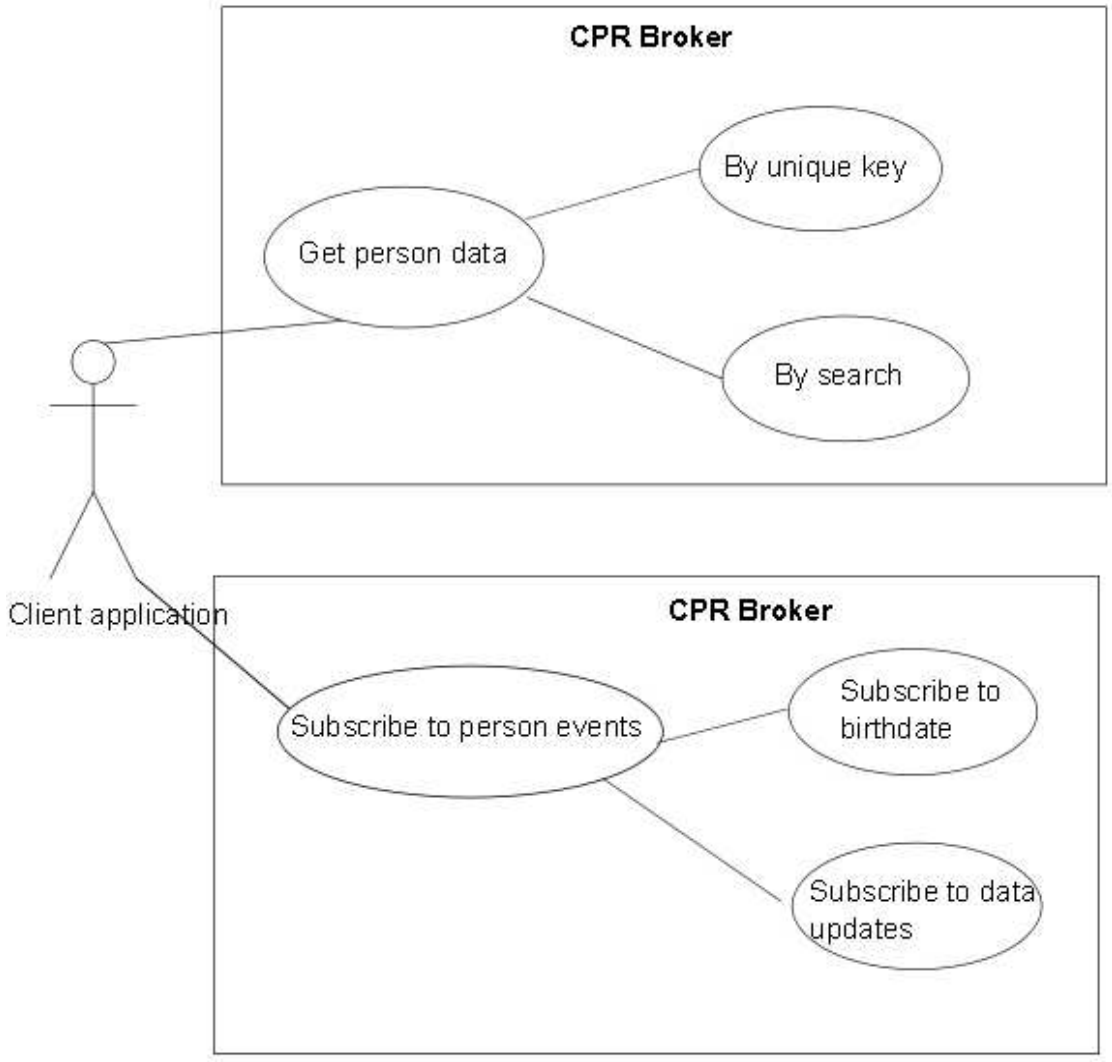
1.5 Administration Interface

This interface is for administering the CPR Broker. i.e., Configuring, authorizing applications, logging etc.

2 OVERVIEW


Client application
Event generator
Events interface
Admin interface
Part interface
DPR
Subscriptions interface
Local database
Engine
KMD
Person Master
Event Broker
Log
Local database
CPR Broker

3 USE CASES



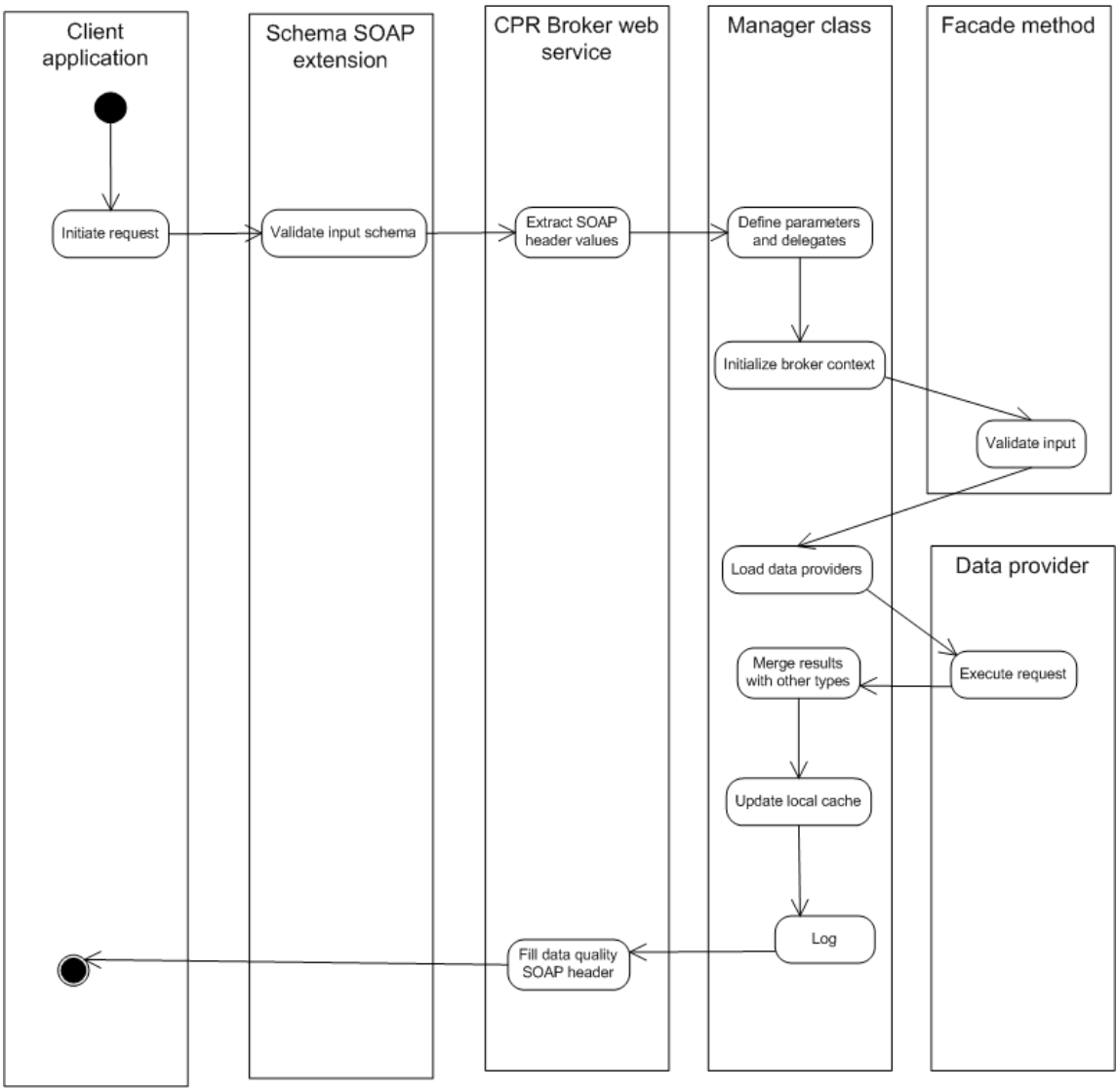
The use case for a client application is to look up person data and to subscribe to person events.

4 REQUEST PROCESSING LAYERS

Clients make request thought the web service implementing the PART standard. The CPR Broker extract values from the SOAP headers, and invokes the broker engine.

The engine contact external data providers to ensure that the client will get fresh data. If new data is obtained the local broker database is updated with the new data as well as registration of the source of the data.

If the client request contains CPR numbers, not already registered in the broker, the broker will request the mapping from CPR numbers to UUID from the PersonMaster service. The broker register the client request in its own log, generate a response according to the PART standard and deliver it to the client as a SOAP response.



5 DATA PROVIDERS

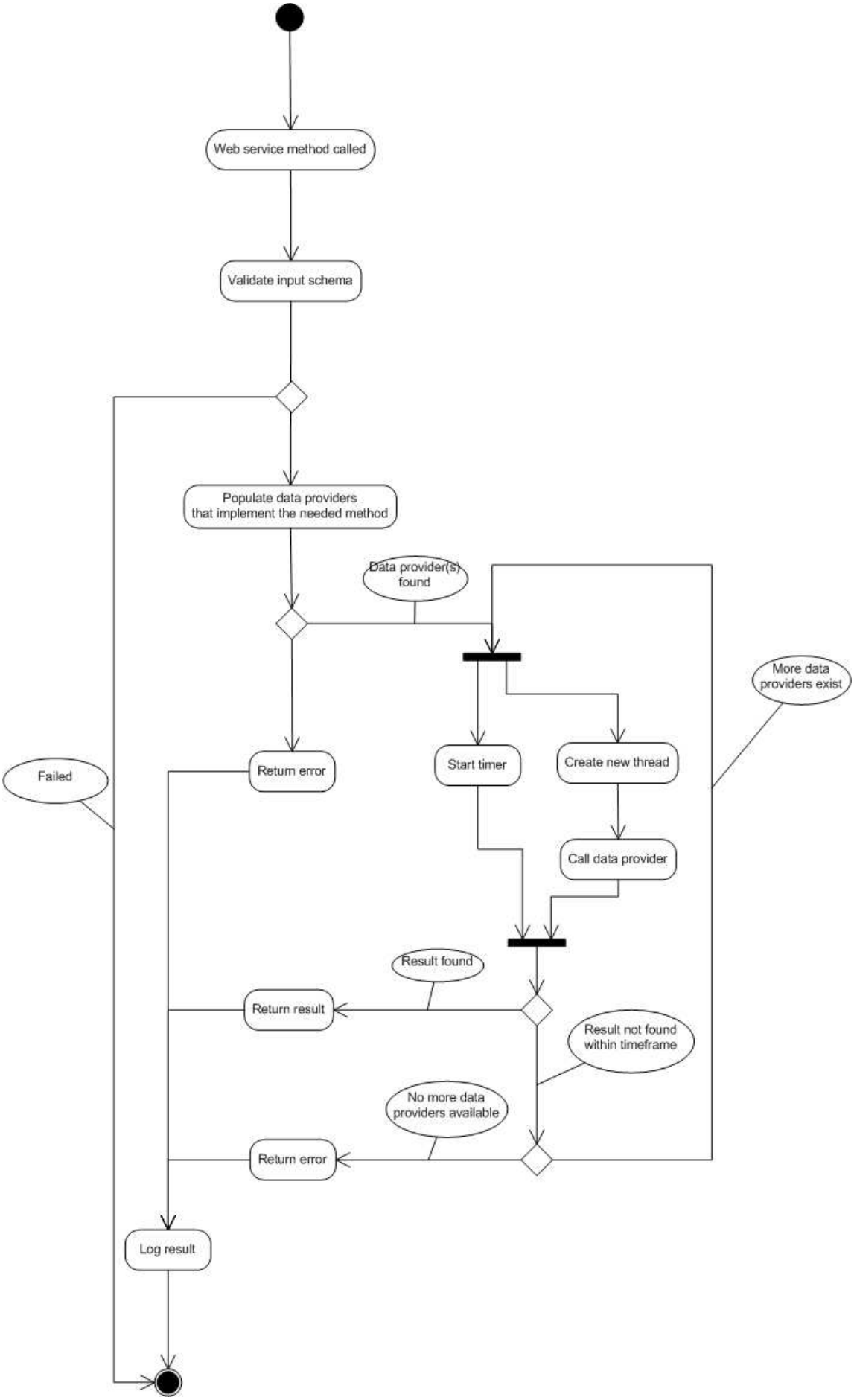
Client requests require access to at least one data provider to ensure that the answer is up-to-date. If no data providers are accessible an error is returned to the client.

A request is handled by a method implemented in the corresponding web interface.

A data provider implements one or more interfaces.

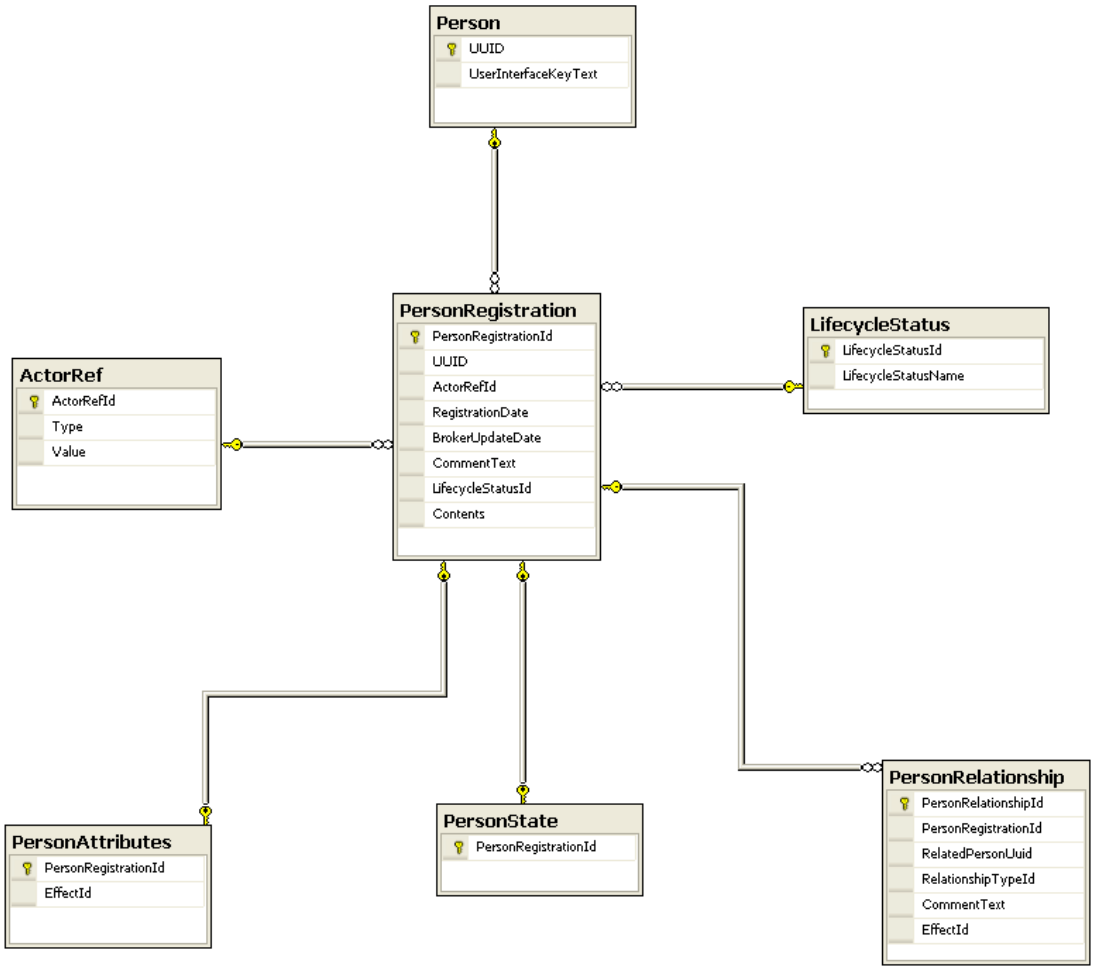
An entry is added to the log in all cases.

There are support for addition of data providers, e.g., for contact info and medical info.


Web service method called
Validate input schema
Populate data providers that implement the needed method
Data provider(s) found
More data providers exist
Failed
Return error
Start timer
Create new thread
Call data provider
Result found
Return result
Result not found within timeframe
No more data providers available
Return error
Log result

6 REGISTRATIONS

6.1 Database structure



6.2 Time perspectives

The most important time perspective is the registration time. Effect time will be specified whenever available. An unknown effect start and/or end date is represented using a special value.

6.3 Mapping

The concept of a UUID is not known to the system's data providers. Therefore the system uses

a database table (PersonMapping) to map persons physical identifiers (UUIDs) to logical identifiers (the CPR number).

The values for the mappings are obtained from a municipal API. If this is not possible, an error is raised.

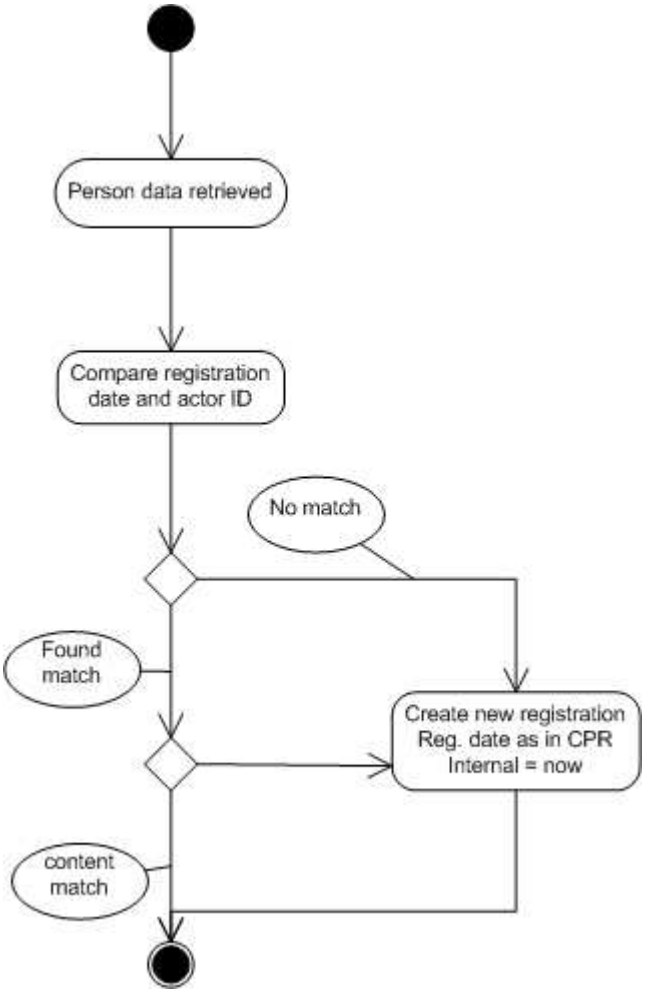
6.4 Registration object creation process

6.4.1 Values

Actors can be data providers, e.g., DPR or KMD. Each actor is assigned a fixed UUID. The registration date will be the latest date in the available data. If not possible, then the date when the broker got the data.

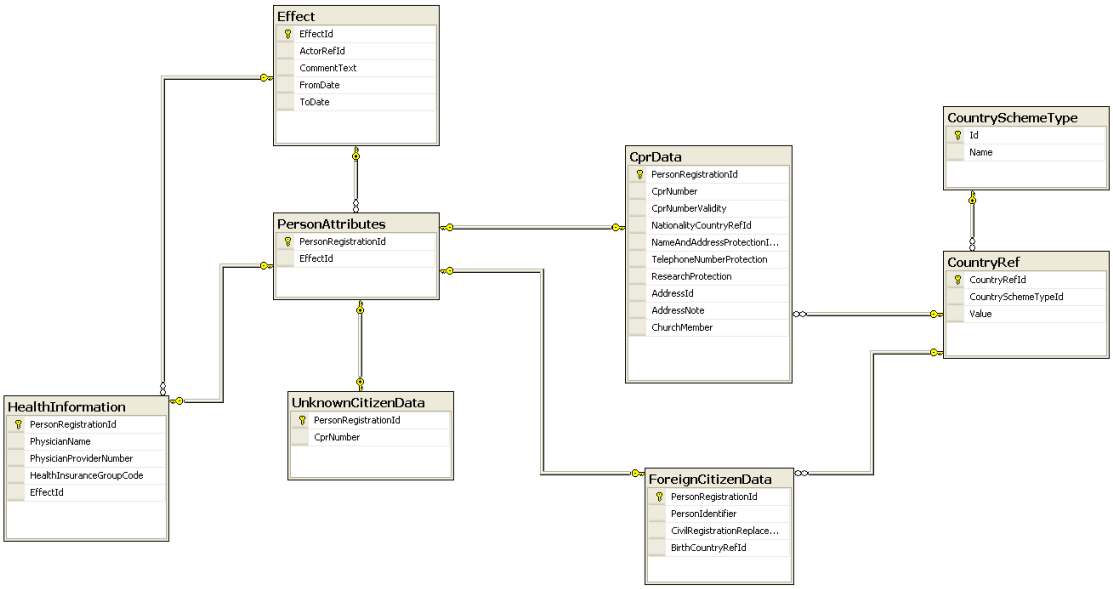
Registration are identified by a persons UUID, an actor ID and a registration date. In the very rare cases when this is not unique (such as in race conditions), there might be more than one registration with the same date. They will all be saved in the local database.

6.5 Local database update

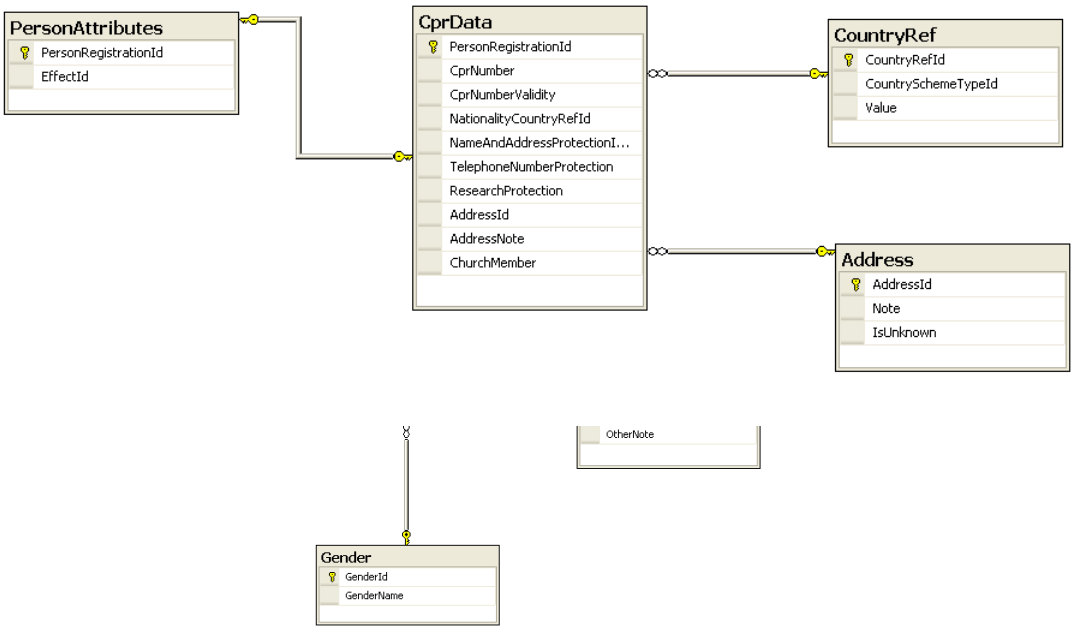


7 DATABASE STRUCTURE

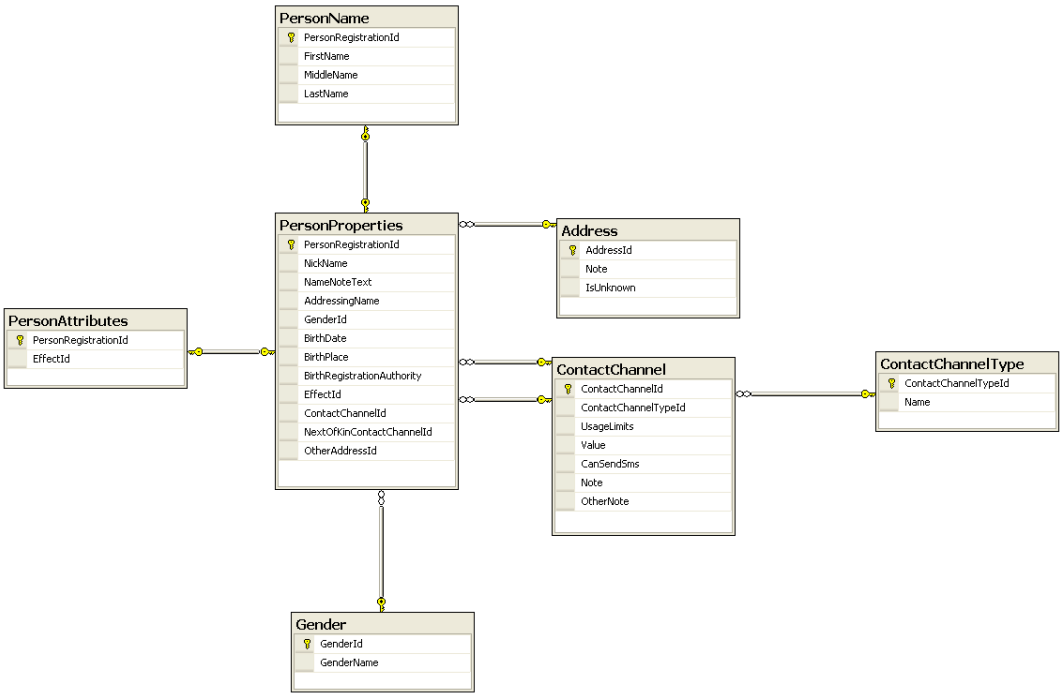
7.1 Person attributes



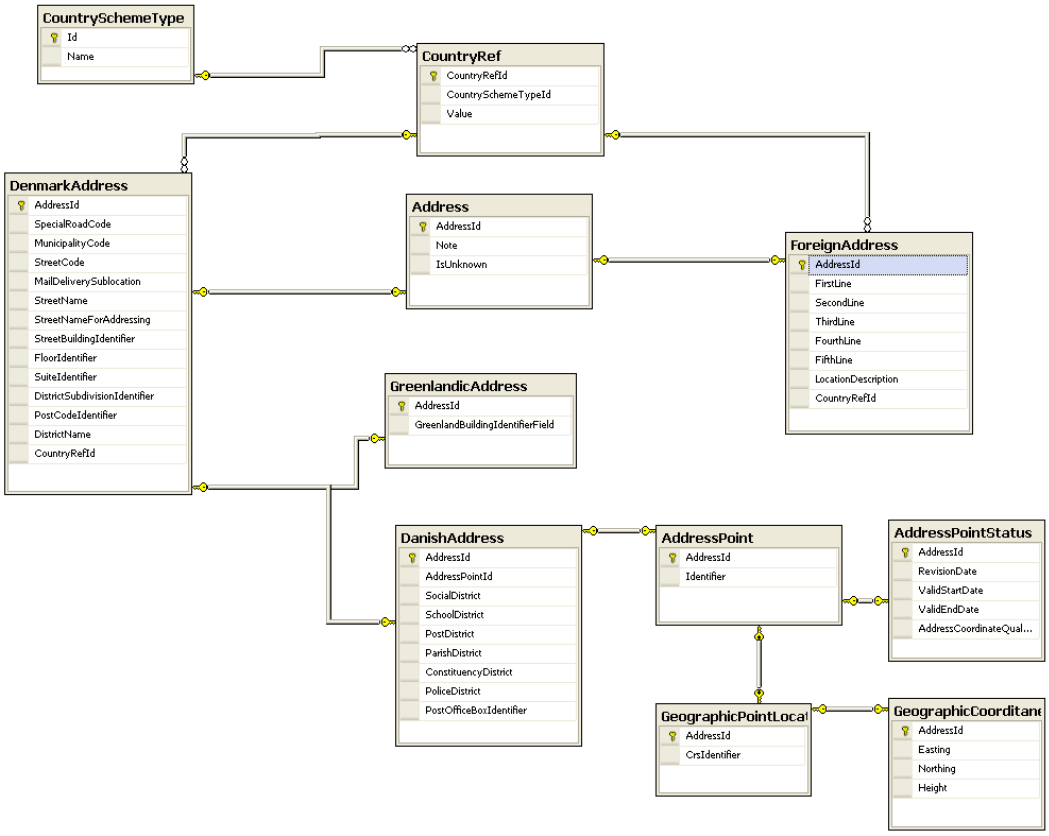
7.2 CPR Data


PersonAttributes
PersonRegistrationId
EffectId
CprData
PersonRegistrationId
CprNumber
CprNumberValidity
NationalityCountryRefId
NameAndAddressProtectionI...
TelephoneNumberProtection
ResearchProtection
AddressId
AddressNote
ChurchMember
CountryRef
CountryRefId
CountrySchemeTypeId
Value
Address
AddressId
Note
IsUnknown
OtherNote
Gender
GenderId
GenderName

7.3 Person properties

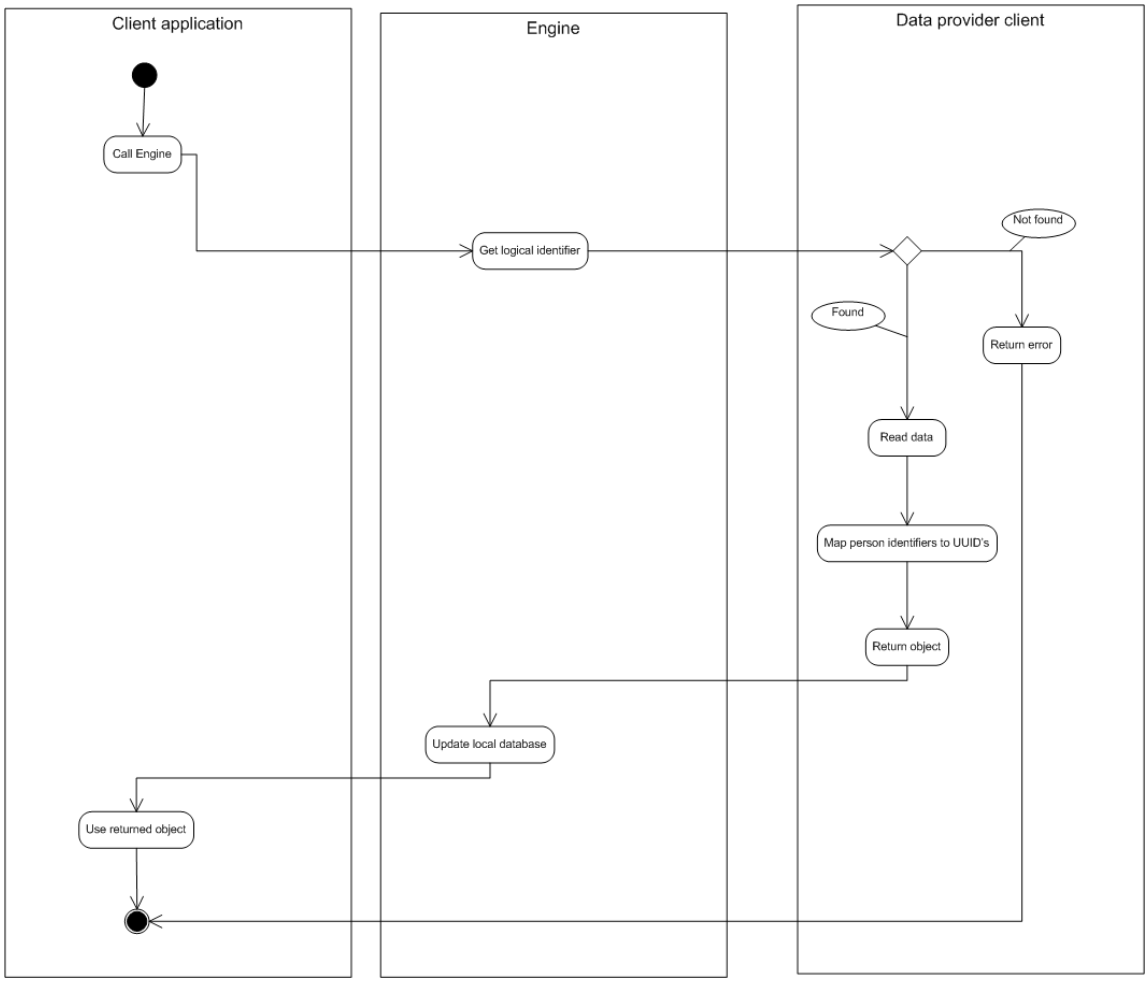


7.4 Addresses



8 READ & LIST OPERATIONS

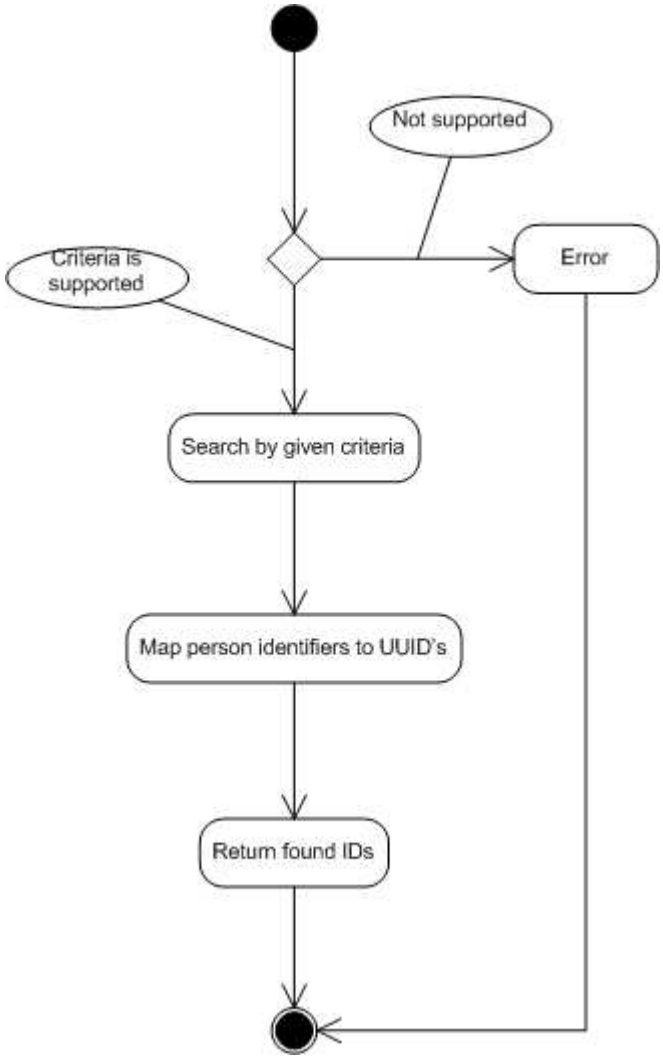
The refresh read operation forces the broker to get new data from data providers.



9 SEARCH OPERATION

The Search operation allows searching the local CPR Broker Database, i.e., not the external data providers.

It is possible to search for people by their CPR number, Age or Name.



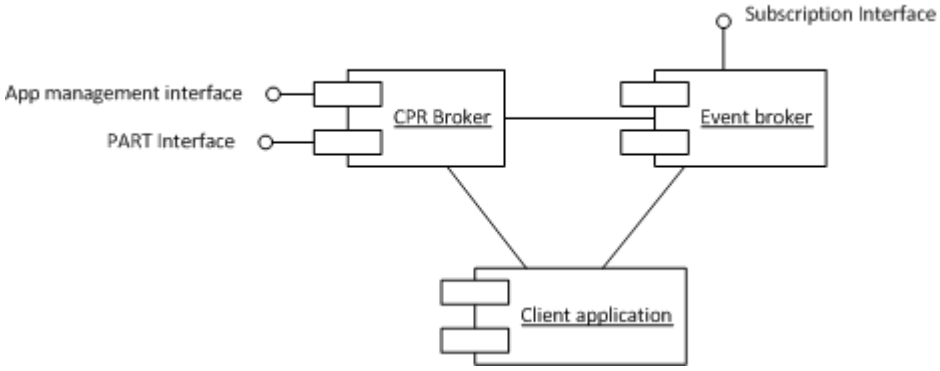
10 EVENTS

10.1 Client interface

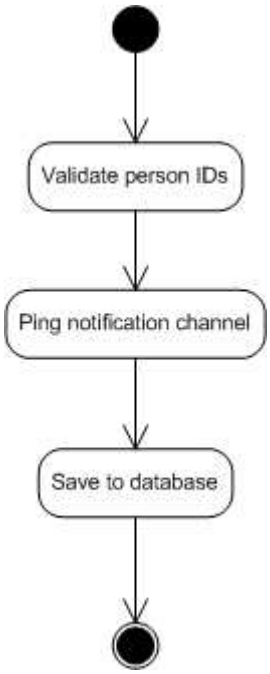
Clients use the event broker web interface to register for events. When registering the client specify both the events it is subscribing to and the channel it want to receive notifications.

A channel can be a web service or a file name on a file system accessible to the broker.

10.2 Overall Event Architecture



10.3 Subscription flow



10.4Notifications

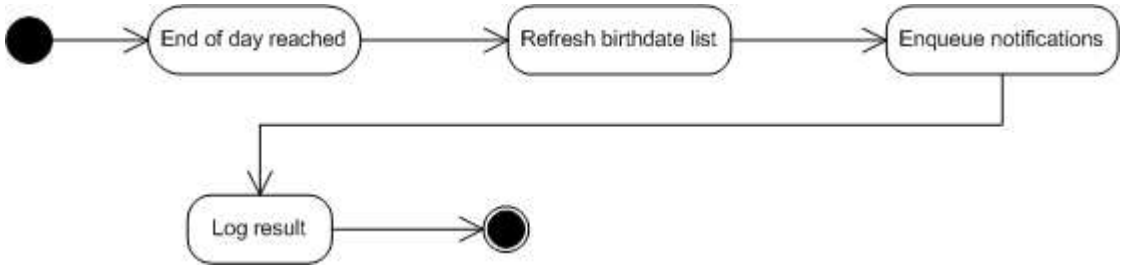
Data change events are detected as soon as they occur.

External events are detected when the PART web interfaces receives refresh calls from external event generators and the refresh call subsequent obtains new data from a data provider. The external event generators can be services that polls data providers.

Birth-date events are detected daily.

The Event Broker service delivers the notifications to subscribers.

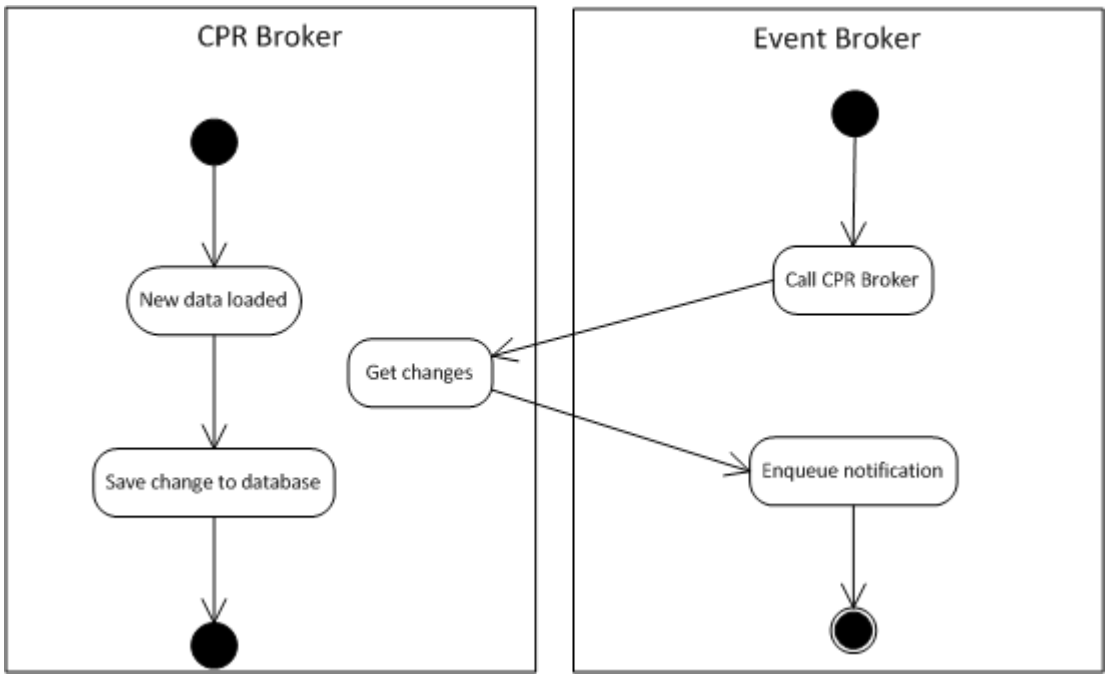
10.4.1 Birthdate Notifications



Birthdate notifications allows a subscriber to specify an age as a number of years and a advance period as a number of days for a list of one or more persons, using their current CPR numbers. Subscribers will receive a notification the advance period before each person on the list reach the specified age.

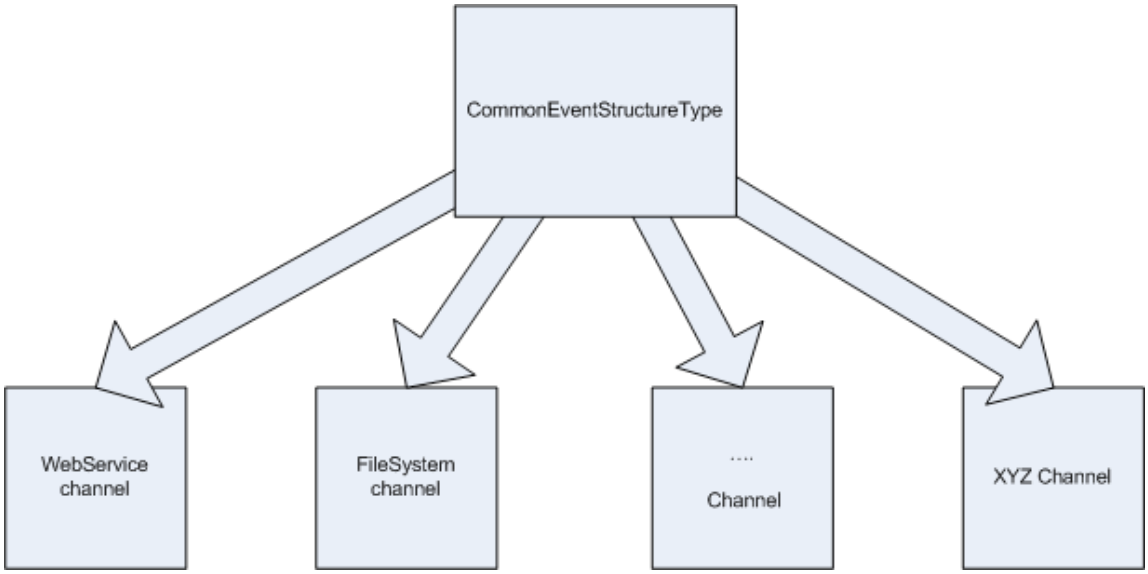
Birthday notification are generated and delivered once a day. If delivery fails for an event subscriber, it is written as an error the log systems. Client application subscribers that for technical reasons did not receive subscriptions have the option of resubscribing with a longer advance period.

10.4.2 Data Changed Notifications



Data Changed notifications are generated when the CPR brokers is updated with new information about persons. This can only happen when data is received from external data providers. Data is received from external data providers either through normal client Read operations or through Read Refresh operations. Read Refresh operations can be performed by external services to propagate updates through the broker to broker clients subscribing to the relevant person.

10.5Notification channels


CommonEventStructureType
WebService channel
FileSystem channel
....
Channel
XYZ Channel

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