TrackMe

Project presentation

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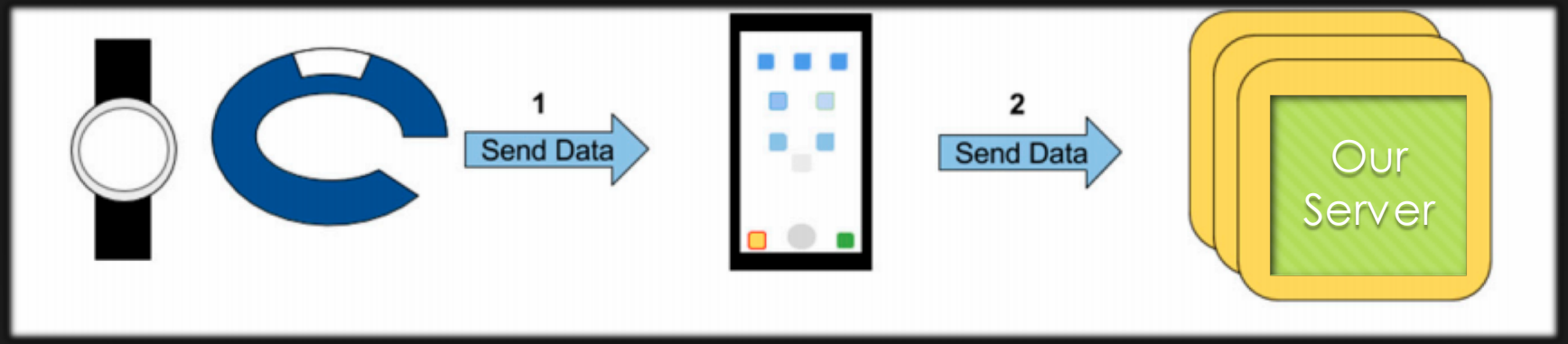
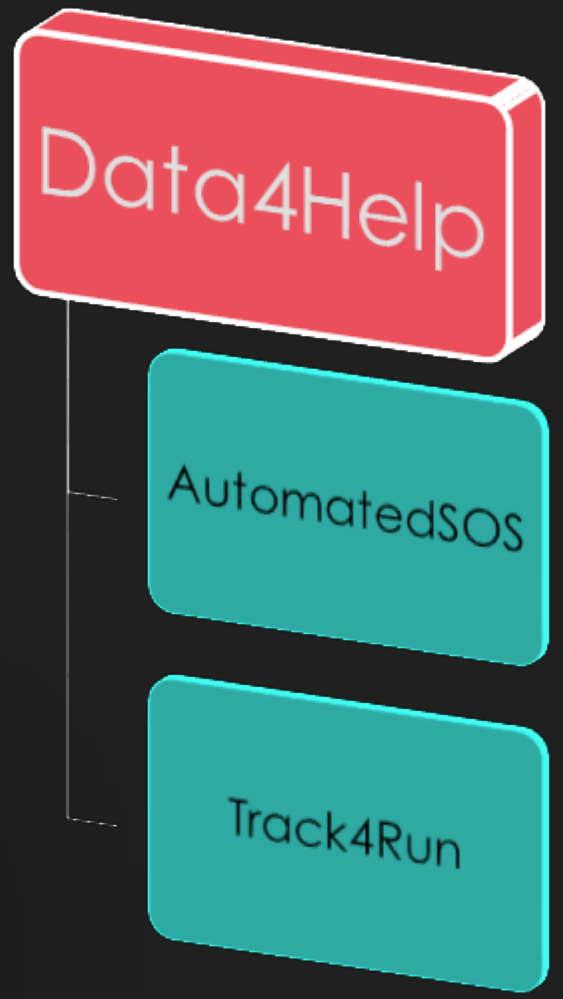
Context

Problem and Scope

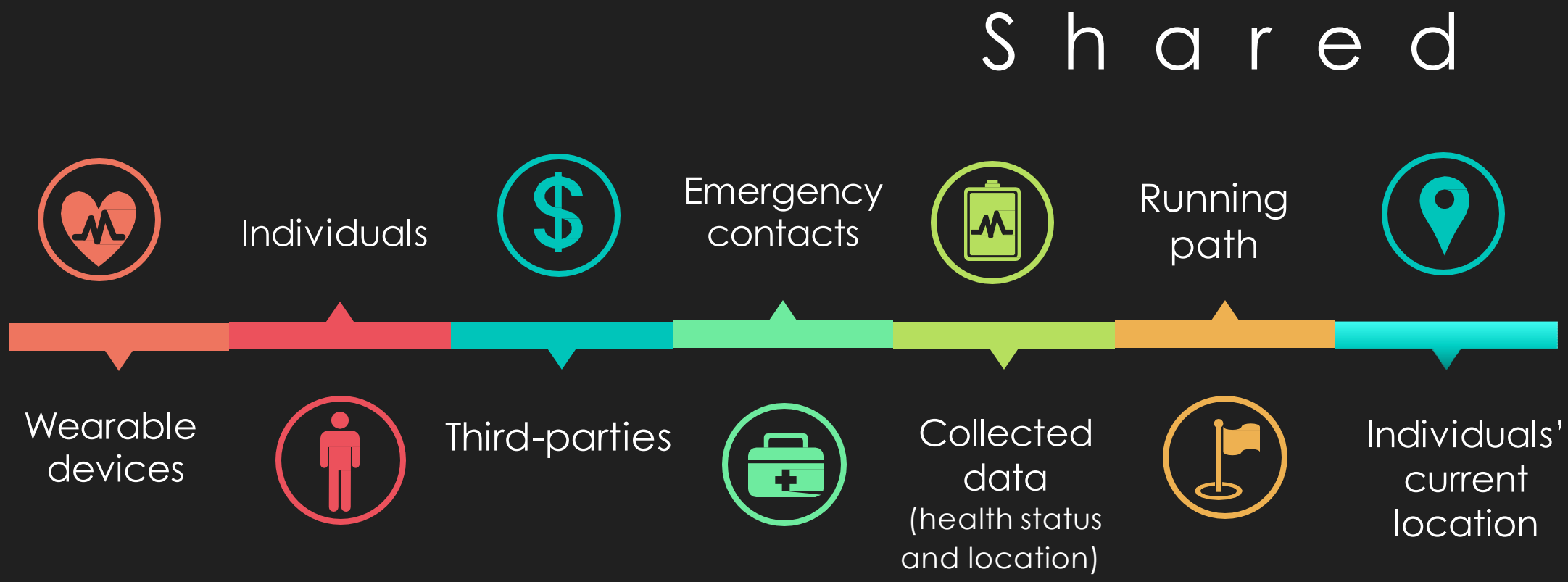
TrackMe develops health-monitoring devices devoted to measure and record different parameters related to the health status of a person and location.

To improve customers' experience, TrackMe decided to *offer three new services*





World and shared phenomena



Goals <<Data4help>>

The individual can allow (or refuse) Data4Help to use their data

The third party company should be able to access data of a specific individual

The third-party company should be able to access anonymized data of groups of individuals under certain constraints

The third-party company could subscribe to get new data related to specific individuals or previously saved search

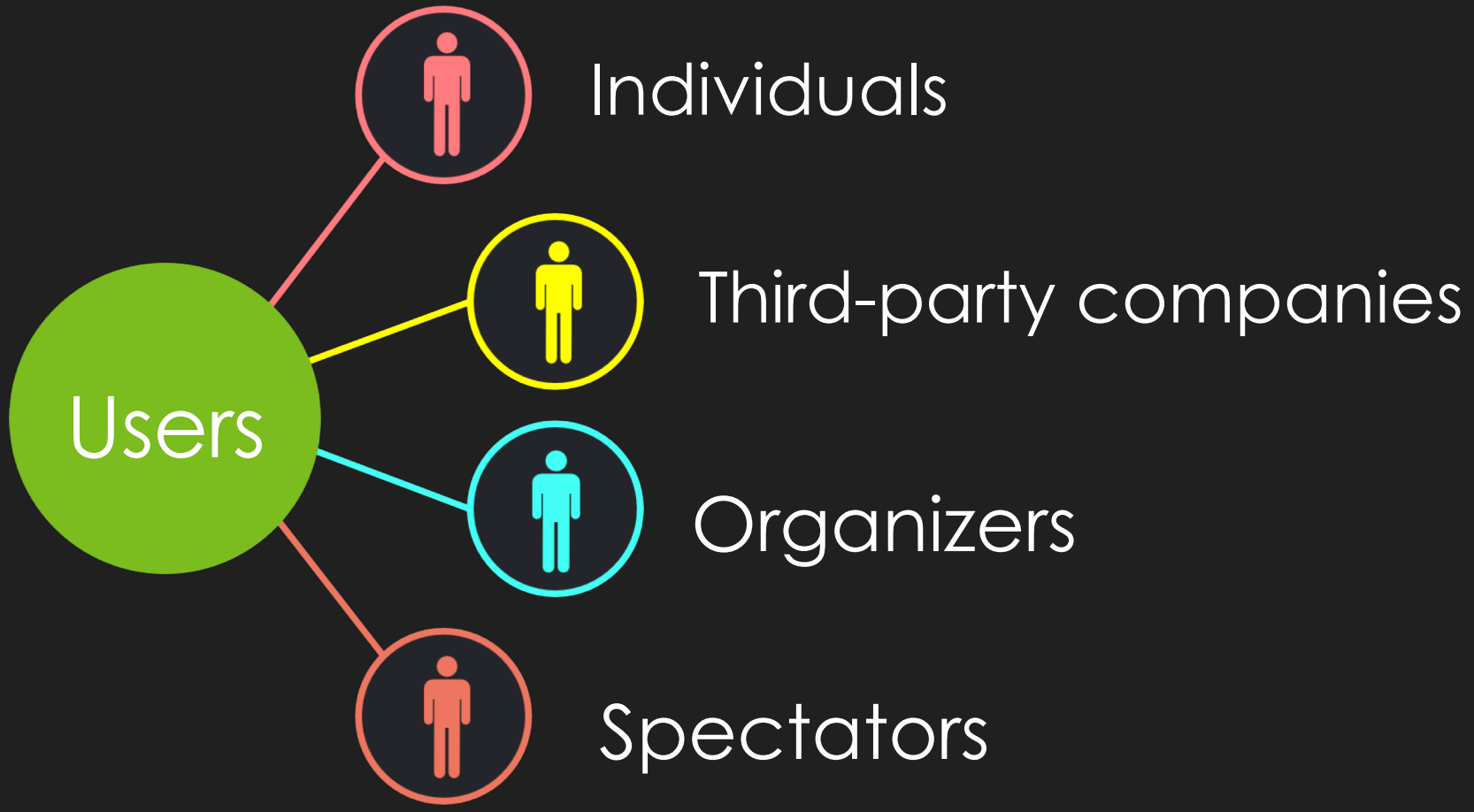
Goals <<AutomatedSOS - Track4Run>>

Provide a service capable to send a notification to the health-care service when any individual's parameter is out of range

Run organizers could define the path for a given run and TrackMe users can enroll to it

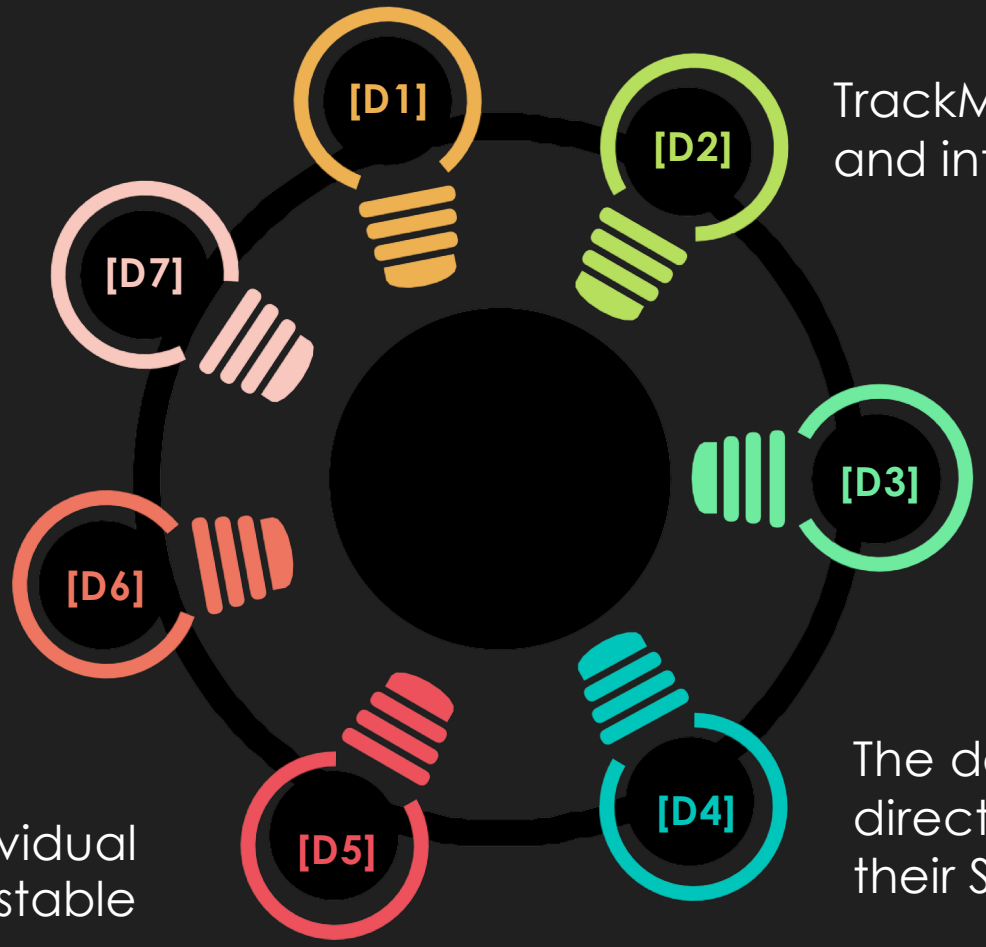
Run spectators could track the position of all the runners during a race

User characteristics



Domain assumptions

Wearables accuracy when monitoring individuals



[D1] The organizers hold all needed permissions to set up a run

[D2] TrackMe addresses data protection and integrity against possible attacks.

[D3] TrackMe devices are up and running during monitoring.

[D4] The data collected schema is directly related to the individuals' by their SSN and has the proper structure.

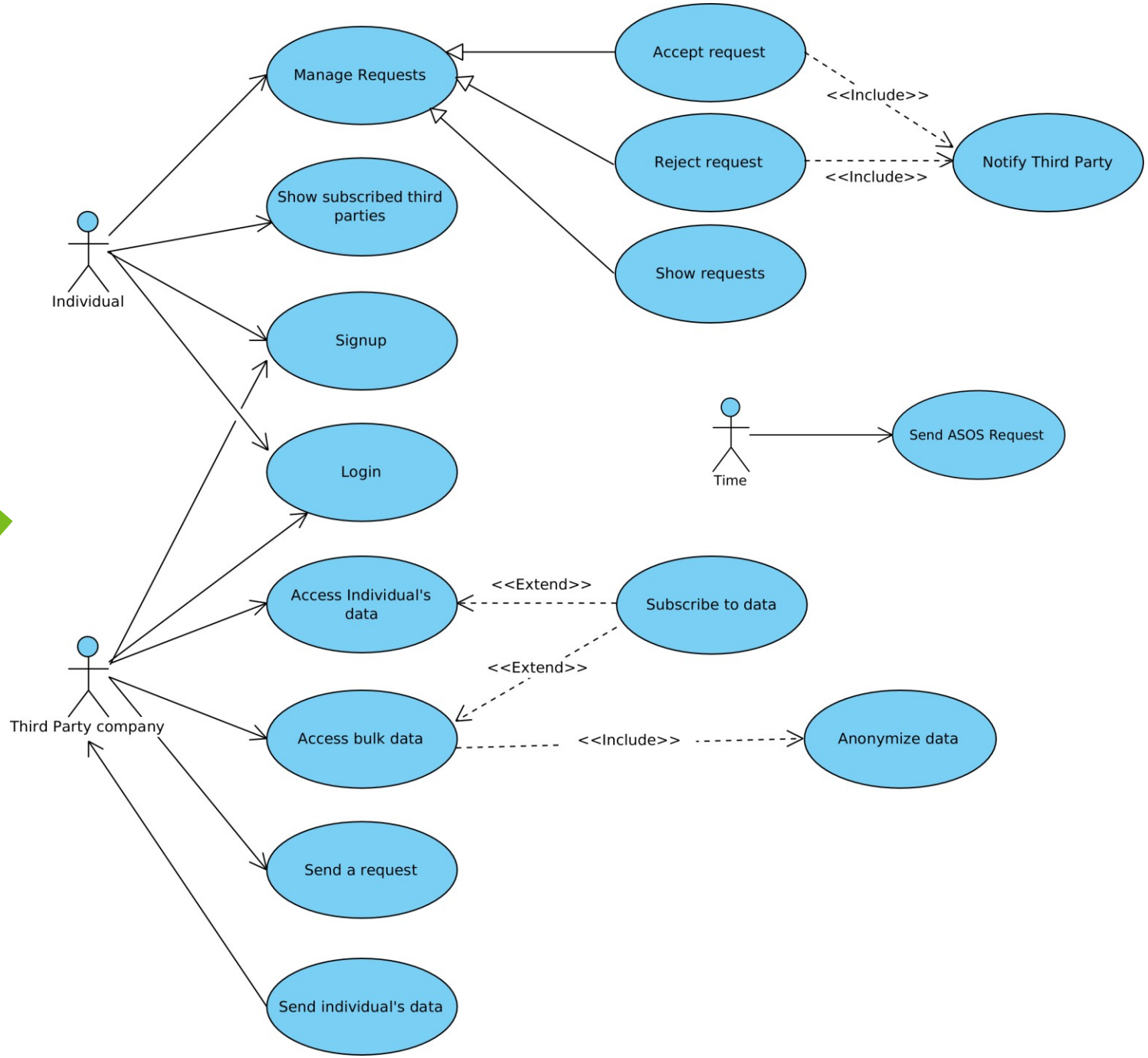
[D5] SSN provided by the individual is valid and trustable

[D6] Out of coverage scenarios cannot be handled by ASOS

[D7]

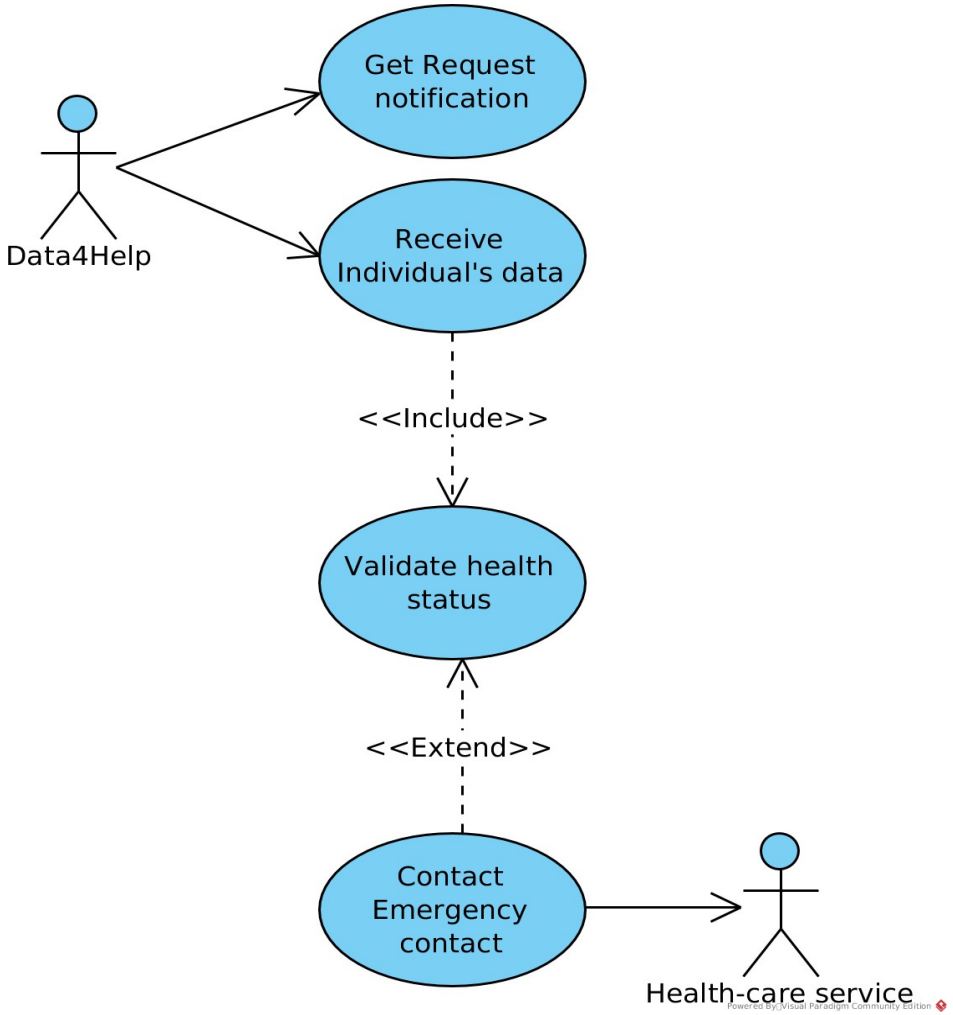
TrackMe Use Cases

Use case diagram <<Data4Help>>



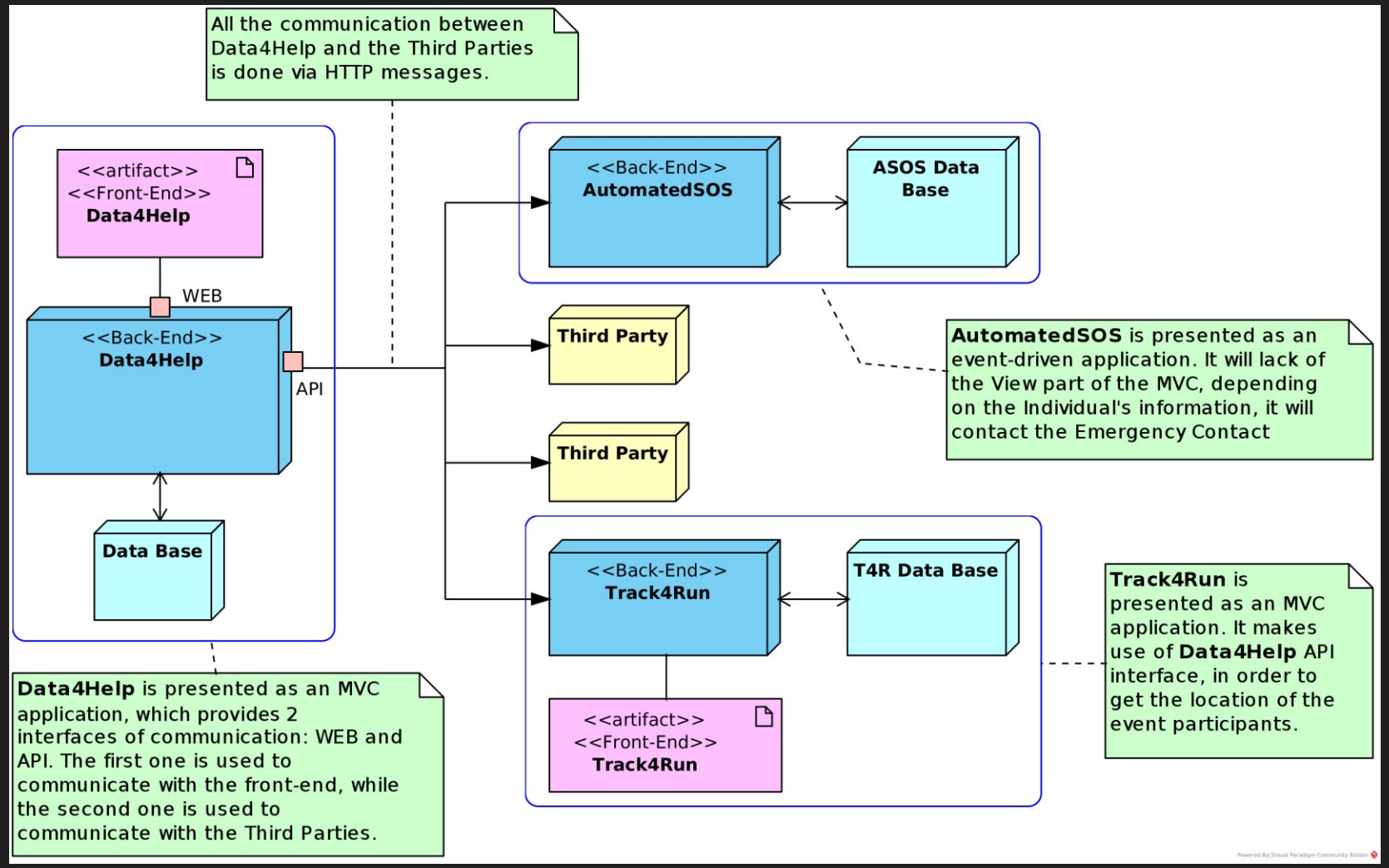
Use case diagram
<<AutomatedSOS>>

Use case diagram
<<Track4Run>>



Architectural design

Overview

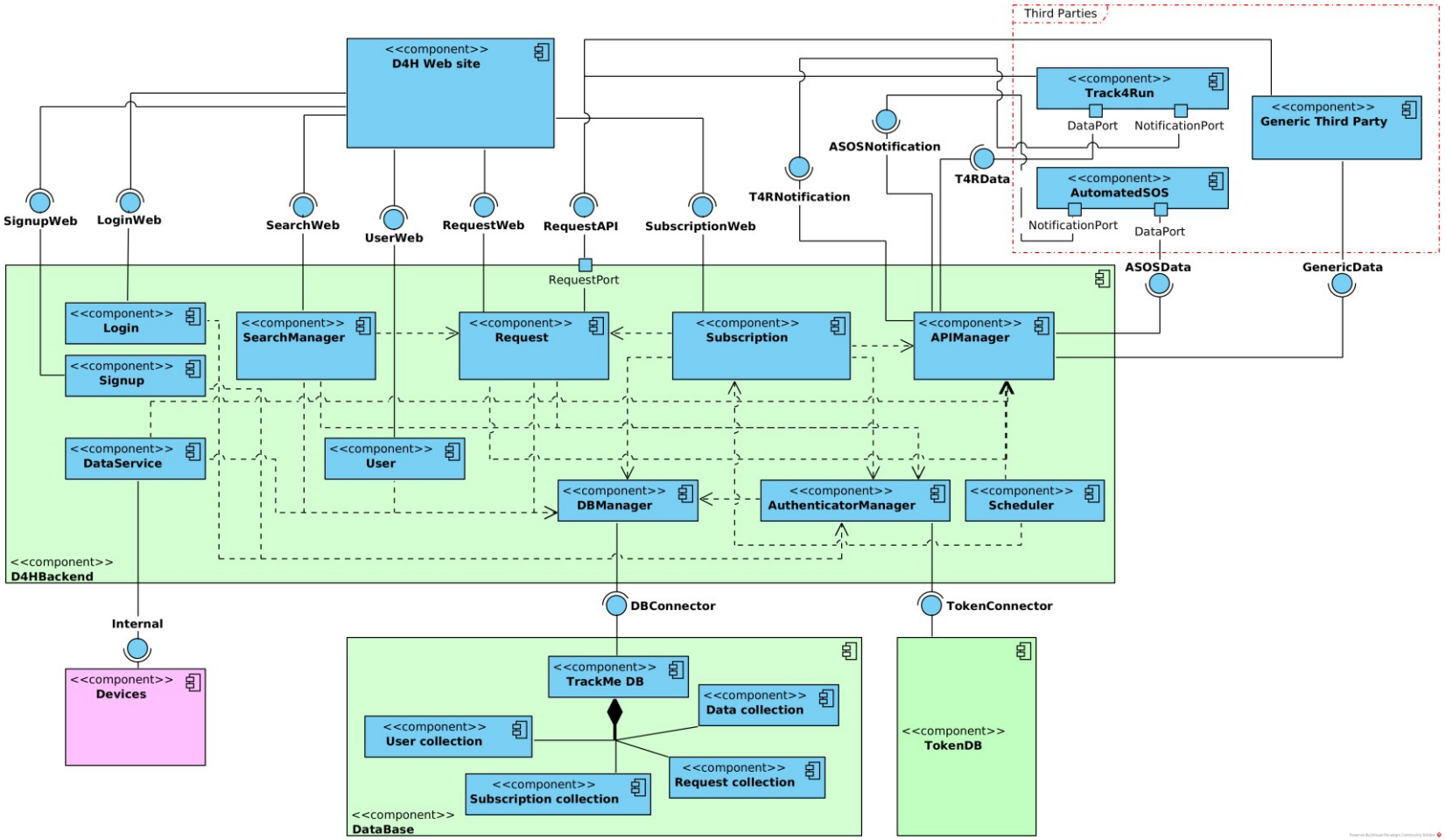

All the communication between Data4Help and the Third Parties is done via HTTP messages.
<<artifact>>
<<Front-End>>
Data4Help
WEB
<<Back-End>>
Data4Help
API
Data Base
Data4Help is presented as an MVC application, which provides 2 interfaces of communication: WEB and API. The first one is used to communicate with the front-end, while the second one is used to communicate with the Third Parties.
<<Back-End>>
AutomatedSOS
ASOS Data Base
Third Party
Third Party
AutomatedSOS is presented as an event-driven application. It will lack of the View part of the MVC, depending on the Individual's information, it will contact the Emergency Contact
<<Back-End>>
Track4Run
T4R Data Base
<<artifact>>
<<Front-End>>
Track4Run
Track4Run is presented as an MVC application. It makes use of Data4Help API interface, in order to get the location of the event participants.

Overview

Data4Help and Track4Run → MVC architecture << webinterface >>

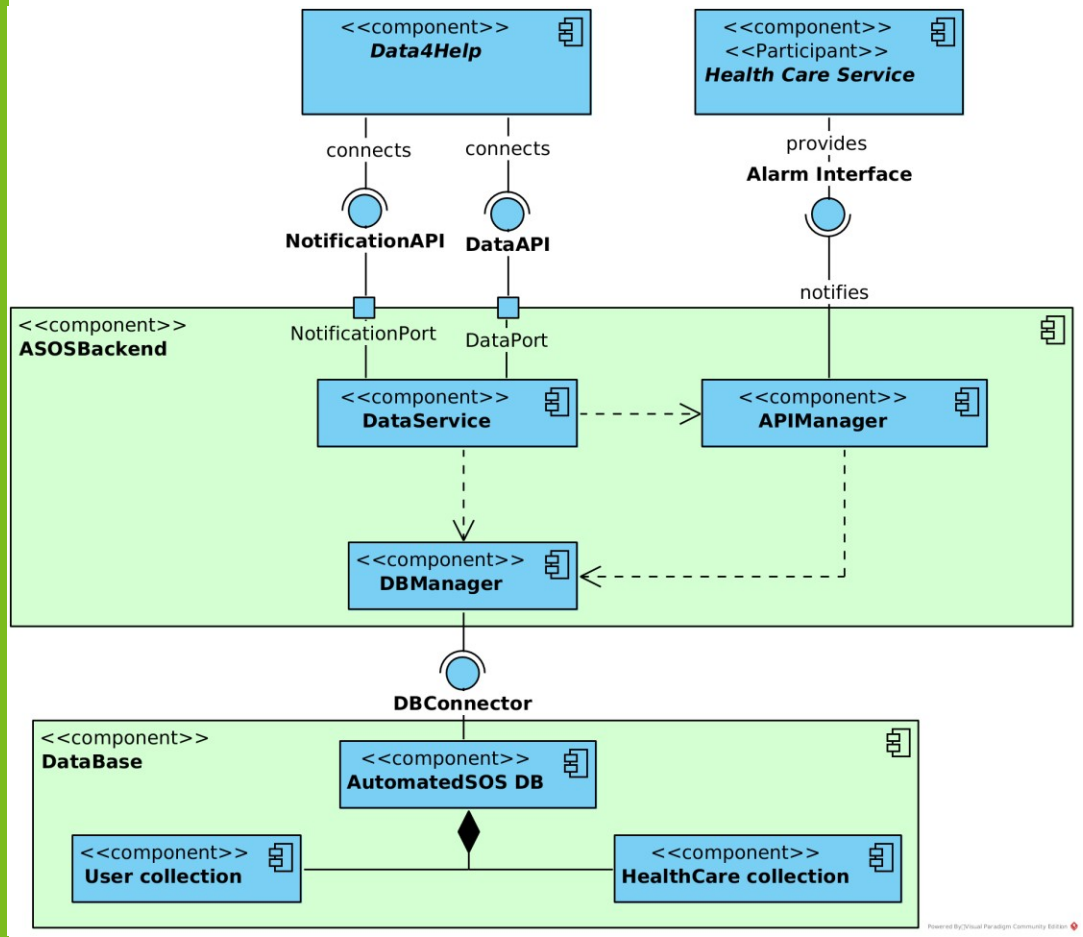
AutomatedSOS → Event-driven architecture << no interface for users >>

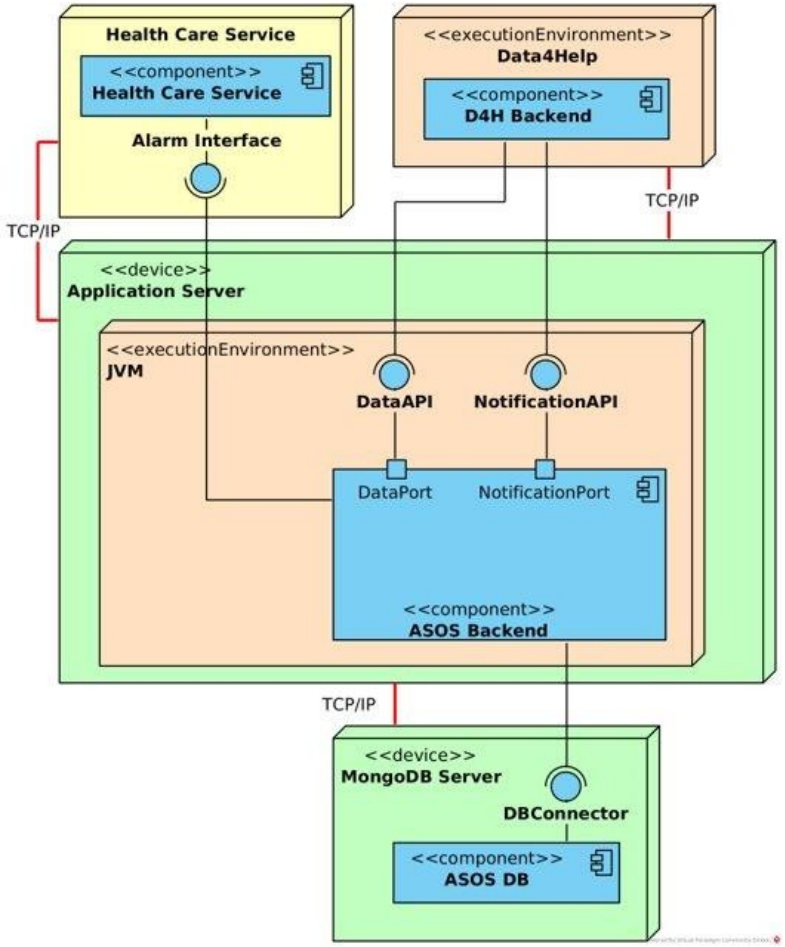
Third parties → communicate with **Data4Help** using HTTP messages



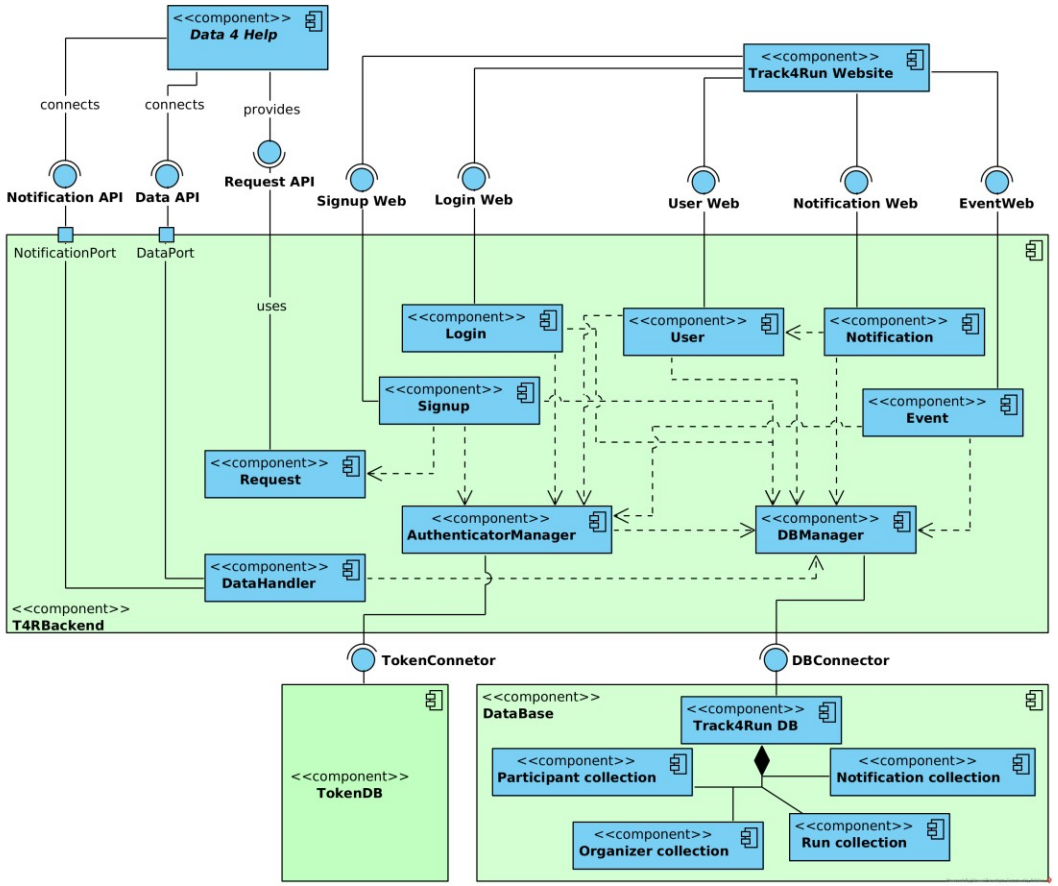
Components & Deployment <<Data4Help>>

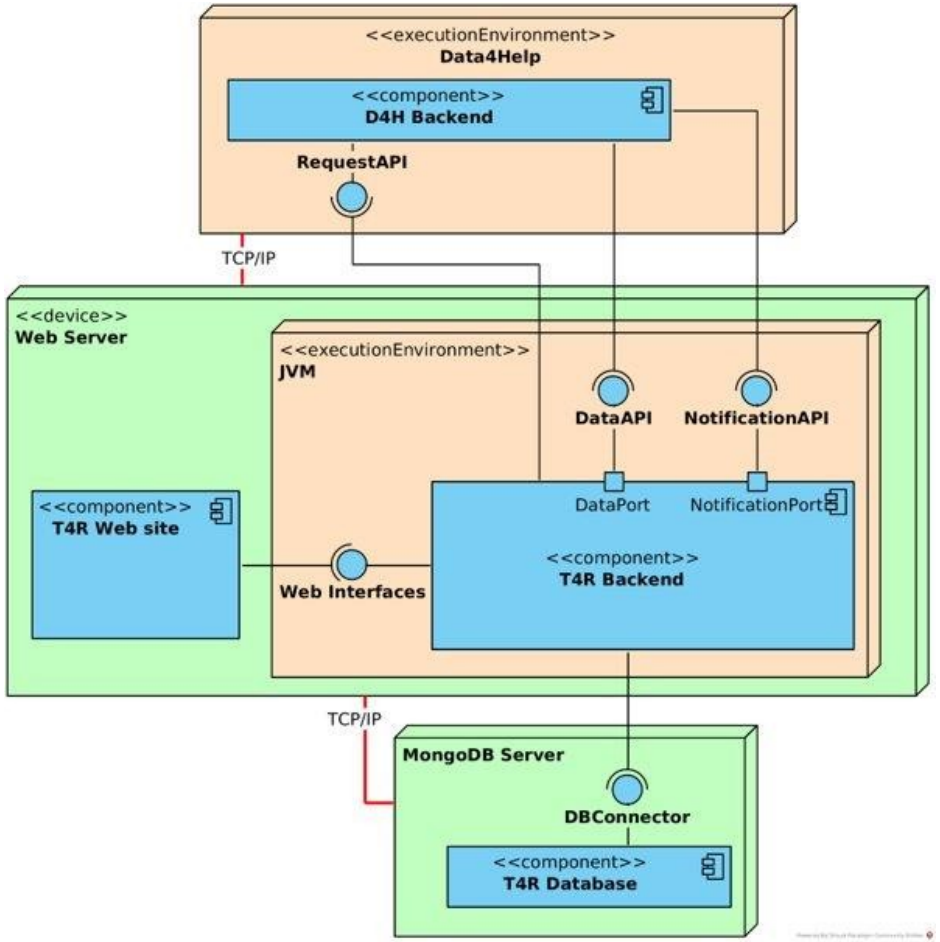
Components & Deployment <<AutomatedSOS>>



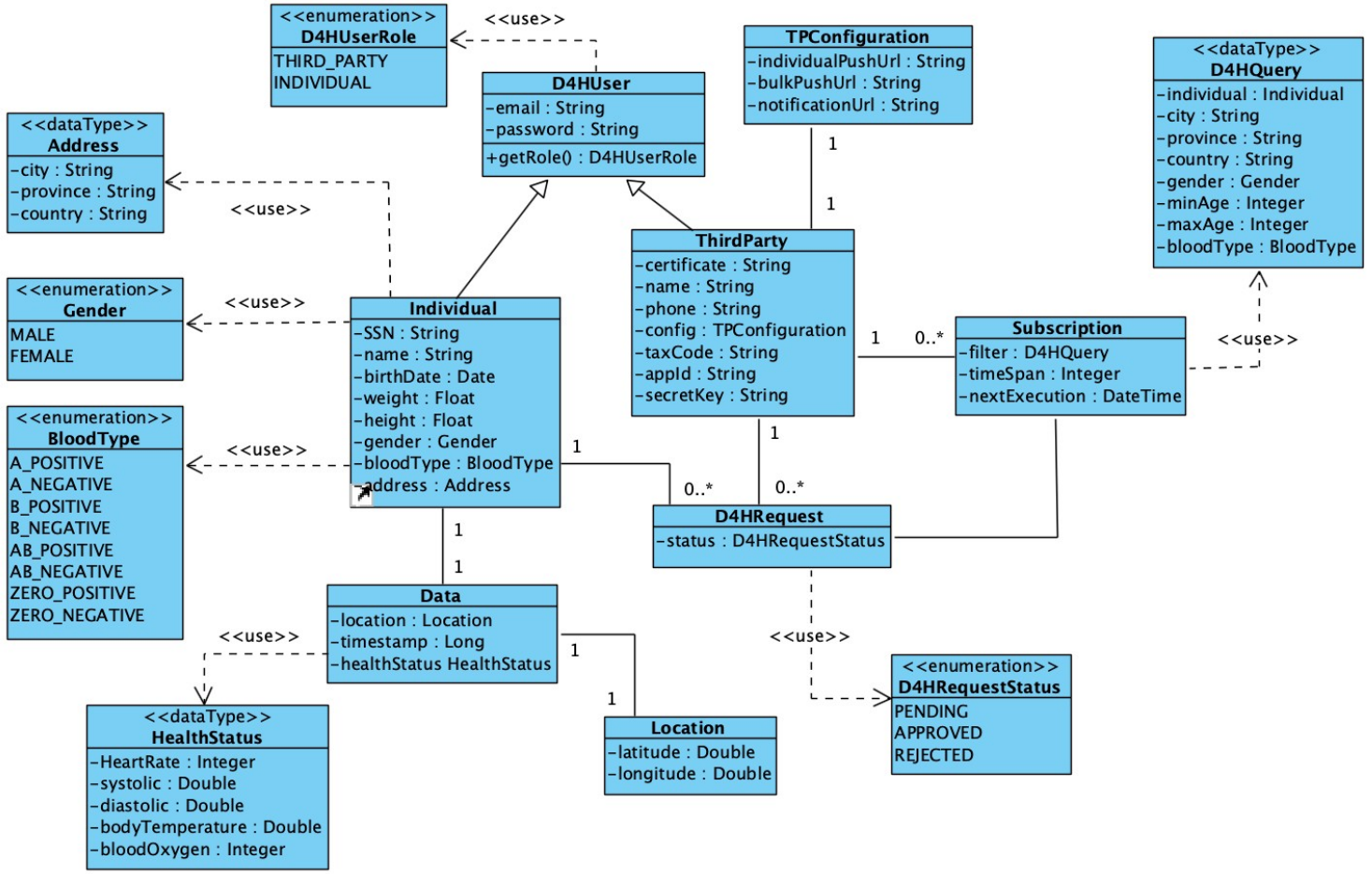


Components & Deployment <<Track4Run>>



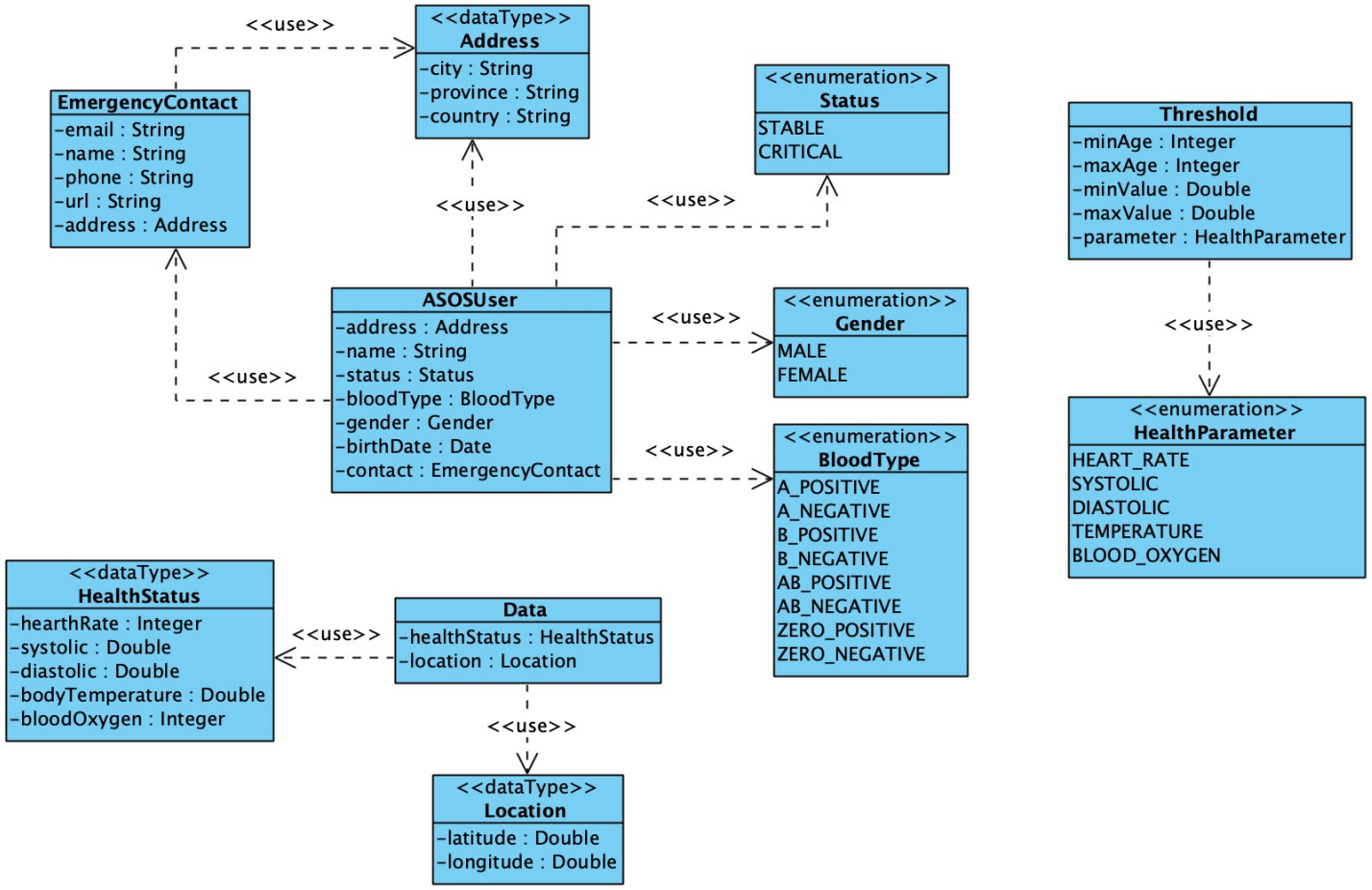


Data model <<Data4Help>>



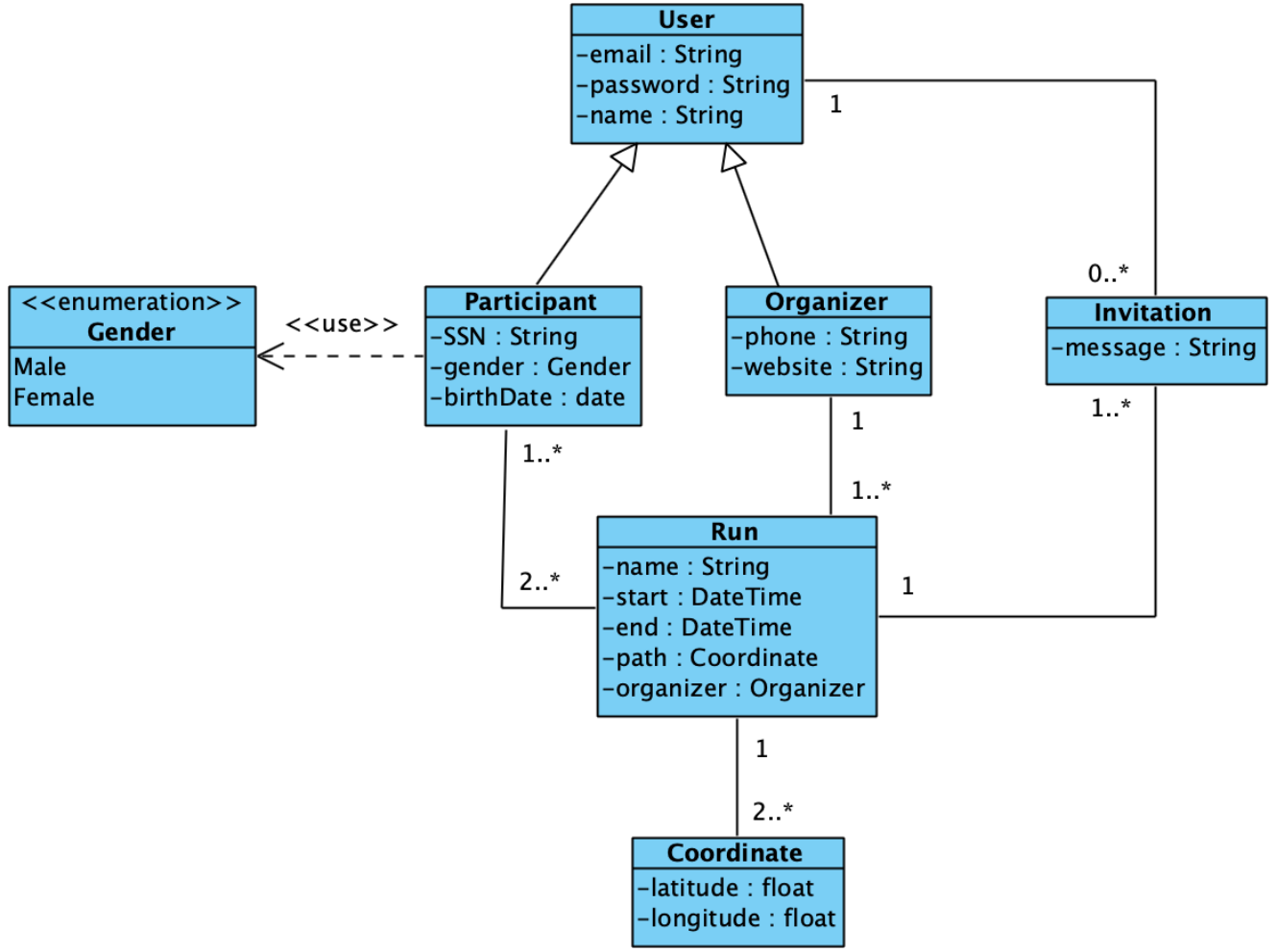
Data model

<<AutomatedSOS>>



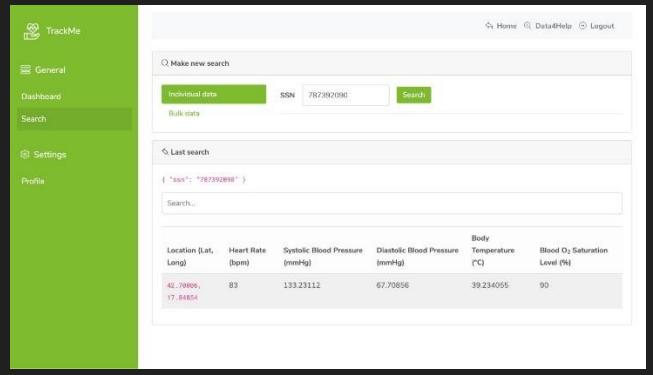
Data model

<<Track4Run>>



Implementation

Data4Help & AutomatedSOS



Implemented requirements

<<Data4Help>>

Users management

[R1/R5] Individuals and Third parties registration

[R2/R6] Individuals and Third parties login

Request

[R7] Notify the individual that a third party company wants to access its data

[R3] Individuals can accept or reject requests of accessing their personal data

Search

[R4] Data4Help can obtain the health status and location of an individual

[R8] Third parties can search for an individual health status and location using his/her SSN

[R9] Third parties can filter data of a group of individuals according to some criteria

[R10] Data of a group of individuals can be anonymized

Subscription

[R11] Third parties are automatically subscribed to an individual health status and location when the request is approved

[R12] Third parties can subscribe to data of an anonymized group of individuals

Implemented requirements

<<AutomatedSOS>>

[R13] The system must send a request for monitoring an individual's data when he/she is older than 60 years old

[R14] The system must monitor, and compare against defined thresholds, the health status of an individual

[R15] The system must be able to contact the health-care service associated to an individual

Development frameworks and technologies

<< Backend>>

Development frameworks and technologies

<< Frontend>>

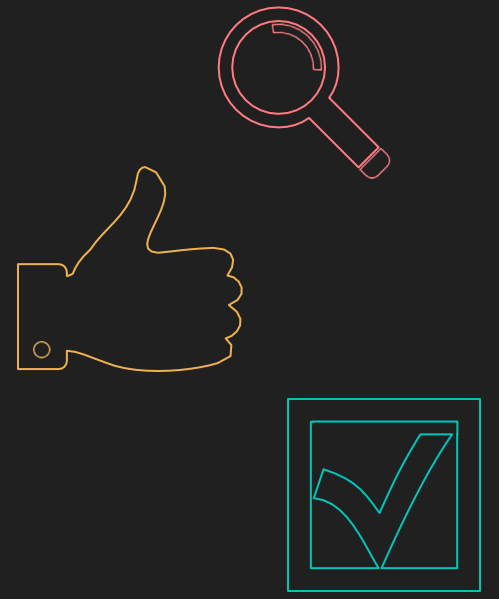
TypeScript

Development frameworks and technologies

<< Additional>>

Integration & Testing

Data4Help & AutomatedSOS



Integration strategy <<bottom-up>>

Integration order:

- Data4Help Components

  Data4Help Web Site

    DBManager, AuthenticationManager
    LoginService and SignupService

    RequestService, SubscriptionService

    SearchManager, UserService, DataService

    Schedulers

- AutomatedSOS Components

  DataService, DBManager

  APIManager

- Track4Run Components

  Track4RunWebService

  Track4RunDB

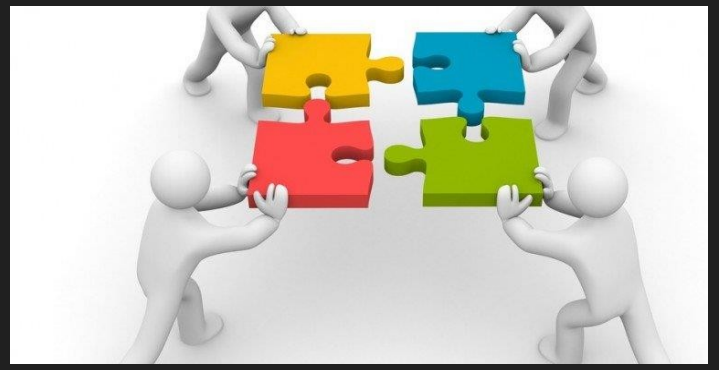
  RunCollection

  TokenService, DataBase

System integration testing

Integration order of subsystems:

- AuthenticationManager and LoginService
- SearchManager, RequestService and SubscriptionService
- DataService, DBManager and APIManager
- RunCollection and ParticipantCollection



User Interaction Integration:

- UserInterface and RequestService
- UserInterface and SearchService
- UserInferface and SubscriptionService
- UserInterface and NotificationService
- UserInterface and RunCollection

Test plan

Scenario List - D4H		
ID	Description	Importance
SC01	Validate the login functionality of the system	Medium
SC02	Validate the login functionality of the system with blank data	Medium
SC03	Validate if third party is able to request individual's data	High
SC04	Validate if third party is able to request bulk data	High
SC05	Validate the individual's response to request (Accept/Reject)	High
SC06	Validate third party is able to see the subscribed data on its dashboard	Low

Scenario List - ASOS		
ID	Description	Importance
SC07	Validate notification service	High
SC08	Validate data service	High
SC09	Validate threshold checking	High
SC10	Validate contacting health care service	High

Demo Time!

Questions?