

Virtual Coaching Activities for Rehabilitation in Elderly

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D5.2+5.3 Coaching services interface definition

Extended summary

This project vCare has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 769807.



Those documents **describe the interfaces for the coaching, data and supporting services** which are implemented within the project and in particular the functionalities and detailed (if applicable) interaction models. It provides implementation details on the used technologies and deployment characteristics within the vCare system.

The document also investigates further the service architecture and how it fits in the overall system architecture using a MQTT broker with its publish-subscribe mechanism as medium of information exchange. This approach ensures the service-oriented architecture design principle. As some services require information from 3rd-party services, such as weather data, the service design allows the **usage of external REST APIs** provided by these applications. Similarly, the **vCare-as-a-Service concept** is discussed here, which provides a REST API for 3rd-party applications.

In this case, the REST API component manages the information flow between the internal context bus, realized using MQTT, by exporting a set of functionalities, which can be provided by vCare to other applications. Although the vCare-as-a-Service concept is **highly relevant as an exploitable asset for vCare**: The information provided here forms a **conceptual basis** and requires further work to be streamlined and finalized.

The format of the messages, called “events”, used for communicating with the services is explained in detail along with **examples showing how JSON encoded events** can look like. These events are categorized in “Event Categories”, in order to give them a clear indication for what each event is supposed to be used for. The category names are based on the different kind of information that is sent around in the vCare system, such as: “gaming”, “health”, “location”, “reminder” etc. Furthermore, several events with distinct event topics are defined for each event category, covering service requests, results, actions or general messages. **Services and other vCare components**, like the “Knowledge mediator”, **can subscribe to one or more of those event topics** in order to receive them. Likewise, **services or other components can publish events with a specific topic** to let other interested and subscribed modules know about a new event. The actual information of an event, the payload, is provided by one or more “property” fields, which consist of “key-value” pairs, like e.g. the “game_id” with an id-value for a specific REHABILITATION game, a “timestamp” to indicate when an event was created or a more general “content” property which can be used to transmit detailed results of an REHABILITATION game session.

For security purposes, a **single sign-on solution** provided by Keycloak is used for all services and components of vCare. This process allows the **usage of tokens following the JSON Web Token** specification, which are used for authentication and authorization between the various services and components.

Finally, **multi-language support is briefly described** and provided by using the commonly used gettext system together with a translation tool like Poedit. This tool enables technical and medical partners to conveniently collaborate and translate all text strings in vCare.

D5.3 provides a more **comprehensive technical description of the services, associated functionalities, user interaction modalities and interfaces**. Starting from a functional description, it also lists and describes the **required personal data** and **details of the integration** in the overall architecture.