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Abstract	:	This document provides a brief overview on the DVVP SW suite alpha release. Focus is on location of the code, installation procedure, Description of functionality and current state of implementation.
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1 Introduction

1.1 Purpose and Scope

This document provides a brief overview on the DVVP SW suite alpha release. Focus is on location of the code, installation procedure, Description of functionality and current state of implementation.

1.2 Document Structure

In brief, the document is structured as follows:

Chapter 1 Introduction

Chapter 2 Resonance Alpha suite

Chapter 3 Resonance implementation status

1.3 Applicable Documents

AD1 SCHUMANN (Project 101082449) – Grant Agreement (October 2022)

AD2 SCHUMANN Consortium Agreement, version 2.1 (October 2022)

1.4 Reference Documents

RD1 SCHUMAN Ontology, SCHUM-WP2-D2.2-REORBIT_1.0.0

RD2 SCHUMANN DSSCK Design Definition File (DDF), SCHUM-WP2-D2.3-REORBIT_1.0.0

RD3 SCHUMANN DSSCK Design Justification File (DJF), SCHUM-WP2-D2.4-REORBIT_1.0.0

RD4 SCHUMANN DSSCK Interface Control Document (ICD), SCHUM-WP2-D2.5-REORBIT_1.0.0

RD5 SCHUMANN DVVP Definition, SCHUM-WP2-D2.6-REORBIT_1.0.0

RD6 SCHUMANN DVVP SW Suite Specification, SCHUM-WP2-D2.7-REORBIT_1.0.0

1.5 Acronyms

API	Application Programming Interface
CCSDS	Consultative Committee for Space Data Systems
DVVP	Design, Verification and Validation Plan
DSSCK	Design and Specification for the Satellite Construction Kit
EC	European Commission
FSM	Functional Satellite Module

2 RESONANCE Alpha Suite

The DVVP Software has been named RESONANCE – in favour of the famous composer Schumann, that is named the same as the project. The released Alpa-Version is not feature complete, but gives a good impression, of how the final software is expected to work.

2.1 Software Location

Software can be found using the following link:
https://gitlab.spaceapplications.com/robotics-software/2023-schumann

This link gives access to all the needed information to run the software server on a local machine. It is envisioned to later provide a public server that users can log on to in order to use RESONANCE. The User-Interface itself is completely browser-based, so no additional installation will be needed.

2.2 Software Setup

Right now, running the server requires docker and docker-compose to be installed. To run the Frontend in a browser also a yarn package manager is required. Details can be found at the repositories README.md.

To build the docker images some Gigabyte of free disk space and a stable internet-connection is required. First the repository needs to cloned using either git or by downloading the repository in a zipped version. A Terminal is required and needs to be navigated to the repository's location. To actually build the images run `make build-keycloak` and `make build`.

After building the required images the backend can be started by running `docker compose -f docker.rdf.yml -f docker.schumann.yml up`. This starts all the required databases, authentication managers, internal networks and a preliminary mail server. The mail server is not actually capable of sending mails to users but allows to integrate this functionality early in all backend parts.

To start the frontend a second terminal hast to be used and navigated to `schumann-frontend/schumann-web-gui`. By running `yarn start` a webserver is started that can be accessed via browser using http://localhost:3000/.

In an initial step keycloak, the authentication manager, needs to be configured. Using a webbrowser navigate to http://localhost:8080/auth and login by using the not yet secured default login admin/admin. This setup has basically two steps: First to import the SCHUMANN master and as second step to import the matching realm.
To import the master, click on "Realm setting" in the left menu, then open the "Action" dropdown in the upper right corner and select "Partial import". In the opened pop up you can import the "conf/schumann_master.phasetwo_v22.04.json"
Afterwards use the "master" dropdown in the upper left corner and select "Create Realm". Here you can select the "conf/schumann_realm.phasetwo_v22.04.json" and create the realm.

With those steps executed the setup is done and the software can be used.

3 RESONANCE Implementation Status

3.1 Intended Alpha Release Features

To give a first impression of RESONANCEs capabilities, alpha release will provide most UIs. Still, some of them do not offer the final functionality. A greeter is available that all new or not logged in users will see. Here users have opportunity to either log in or to create a new account.

Once logged in, a user sees his most recent FSMs that he's been working on. FSMs can be created and edited. A menu gives access to RESONANCEs other features like adding components to the tools component inventory or to create specifications that result in a requirements-baseline for FSMs.

With a focus on software quality not all planned features for the final software are fully present at this alpha release. The ability to create specifications is not yet implemented. Also, connections between components are not considered in alpha release. With specifications and inter-component connections missing the report generation is limited in its abilities, as no compatibility and specification check can be performed.

3.2 Implementation Status 2024-03-21

As of today, the backend structure is completed. This means all the databases, authentication manager, preliminary mail-server and webserver are present. Sketches for all pages have been designed and get implemented. A landing page, login and the user-home are already present and working. Right now, focus for the backend is on implementing all the API needed to communicate with the frontend. Special attention is on those interfaces needed for FSM handling – creating an FSM, starting a session to work on a FSM and to receive a list of already present FSMs.

There are still open discussions on how to model relation (or inter-component connections) and specifications. They need to be modelled in a way, that allows for an ontology to be able to execute automated reasoning for compatibility and specifications check.

An interface to provide new components to and to receive known components from the component inventory is present and can be utilized in the frontend.

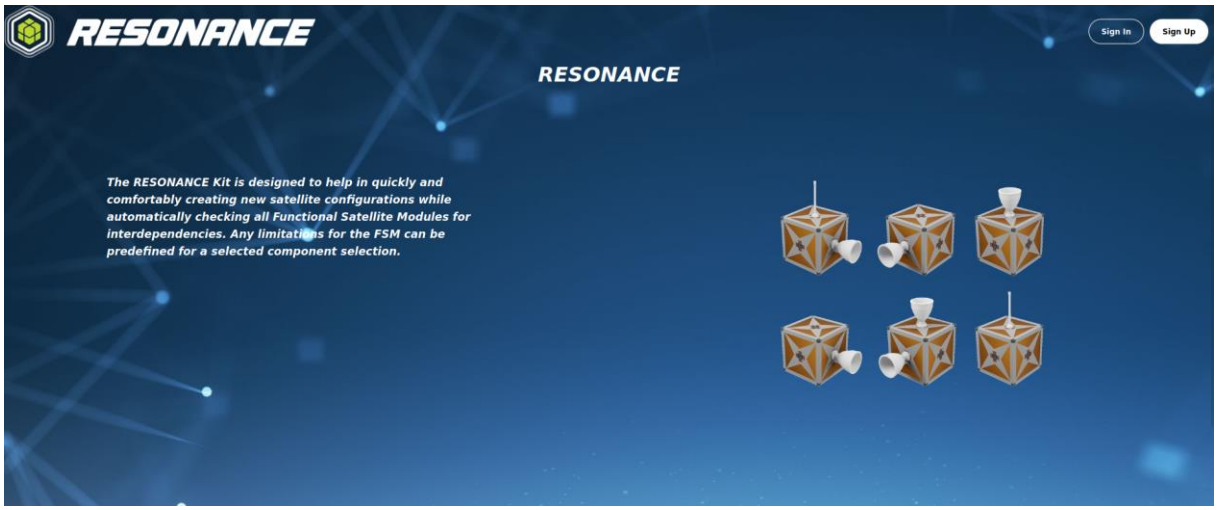

Figure 1: First impression of RESONANCE

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