Subject area technical conception, AI, Java

1. Development of a component for implementing advanced and qualified electronic signatures

The work is dedicated to the conception and development of a reusable software component for Java/Angular applications that enables the digital signature of documents. The component is designed in such a way that both the advanced electronic signature (FES) and the qualified electronic signature (QES) as well as the TAN procedure are supported.

This is intended to make the signing of documents completely digital. Documents to be signed are made available to the user in an inbox. This person can then sign the document with an FES or QES - if they have a signature card - or release it via the application in conjunction with the TAN procedure. This component is intended to be used in the system inventory software, but is also available to other applications. The person's login is to be supported via the company's LDAP.

The work includes the review of existing technical and legal requirements as well as possible procedures, the conception and exemplary implementation of such an approval procedure.

2nd **Conception and prototyping of a workflow builder** to support individual process flows in an inventory software

The workflow builder in the inventory software is designed to enable users to easily create, adapt and automate individual process flows. With an intuitive drag-and-drop interface, users can define steps, set conditions and insert actions such as notifications or inventory updates. The aim is to efficiently map complex work processes without programming knowledge and to increase flexibility in dealing with specific business requirements.

3. **Conception and prototyping of a drag & drop UI builder** with standardized components for the simplified design of user interfaces according to company standards

The Drag & Drop UI Builder is designed to simplify the design of user interfaces according to defined corporate standards. Using standardized components, users can create intuitive and consistent designs without in-depth programming or design knowledge. The focus is on a user-friendly environment that supports rapid iterations and prototyping while ensuring compliance with corporate design guidelines.

4. Conception and implementation of a Java-C integration based on the Foreign Function & Memory (FFM) API from JDK 22.

Many core systems of companies - including the PASS document management system DMS - are implemented in C and connected to the Java world via the classic JNI. This connection is complex and not 100% stable. With JDK 22, the FFM API is now available, which makes the connection of C functions much easier. In the form of a representative prototype, C functions are to be integrated via the FFM API and their performance verified. Furthermore, the opportunities of in-process integration are to be presented in comparison to integration via remote interfaces such as REST.

Flutter topic area