# text for the fact sheet

## environment

Analog electric meters read only one value for power consumption. In contrast, smart meters do readings not only with a higher frequency, they also meter additional values like voltage, power frequency, effective power, reactive power, phase shifting for each phase. These values are normally metered every quarter of an hour, sometimes even with a higher frequency. To administer this amount of data, a database has been developed at the Josef Ressel Zentrum of SUAS. Besides the metered values this database stores structure creating data about clients, network operators and describing data about capabilities of the meter devices.

## motivation

Several applications have been implemented since the deployment of this database system. Most of these applications access the database directly and are installed locally, which leads to redundant copies of meter-data and impedes changes of the database structure. SmartValAPI provides a solution for these obstacles: on the one hand avoids a central instance of the database distributed copies of the meter-data, on the other hand instead of a close relation between application and data access layer, these two components are loosely coupled. For this further development and changes on a database level can be done without affecting existing applications.

## implementation

SmartValAPI provides access for applications to meter- and master-data via a REST-interface. The payload-data, which is the result of queries, is presented to the initiator or caller-program as a JSON-object. In a centralized environment identification, authorization and access restriction has to be tamper-proof, SmartValAPI uses a LDAP-server to ensure security. SmartValAPI encapsulates the location and database system, for this it is possible to implement applications without having to know internals of the data model. This implies more benefits: independent development, parts of or even the whole database system can be changed without the necessity of adapting the application programs. Growing tables can be transferred to a different database system to respond to performance necessities. The implementation uses the Spring framework, which facilitates easy readable and understandable code. The software developer can concentrate on the domain, technical details are hidden and provided by the framework. To lower performance constraints SmartValAPI can distribute each of its main components: the database system, the application server and the LDAP server can be executed on different computers. The main focus while implementing was set on easy extendibility, understandable code and compatibility with existing implementations.