

CLAFIS KPF

(Knowledge Processing Framework)

A knowledge management and processing framework is needed in order to efficiently store, organize and process existing knowledge of a certain domain, to gain new insights, or efficiently reuse existing knowledge. A prototype of a platform (a software system) for information processing and knowledge management (IPKM) was implemented. In the context of CLAFIS (EU-FP7-Project “Crop, Livestock and Forests Integrated System for Intelligent Automation”), it focuses on the specific requirements of the agricultural domain.

The different “views” on the framework are

- the architecture itself and implementation of needed knowledge management in several realized Use Cases
- the used data aspects and
- the cloud-readiness of the architecture and the parallelism of the used algorithms

Software Architecture

- Modules: encapsulate and bundle different Use Cases and can be added and removed to the framework
- Services: smallest unit of functionality, modules are a collection of services, also general services are available
- Support for different data storage technologies (relational database, NoSQL database, etc.)
- Layered architecture: data access, business logic (services and modules), interface layer (web services: SOAP, REST)
- Cloud ready: support for IaaS & PaaS, integration of proven cloud patterns for a robust and resilient execution
- Technologies: modern programming languages and frameworks (ORM-mapping with Spring Data, Spring Framework, Java EE)
- Open to new knowledge: easily extendable (dependency injection pattern) by integrating external services, data, technologies

Implemented Modules

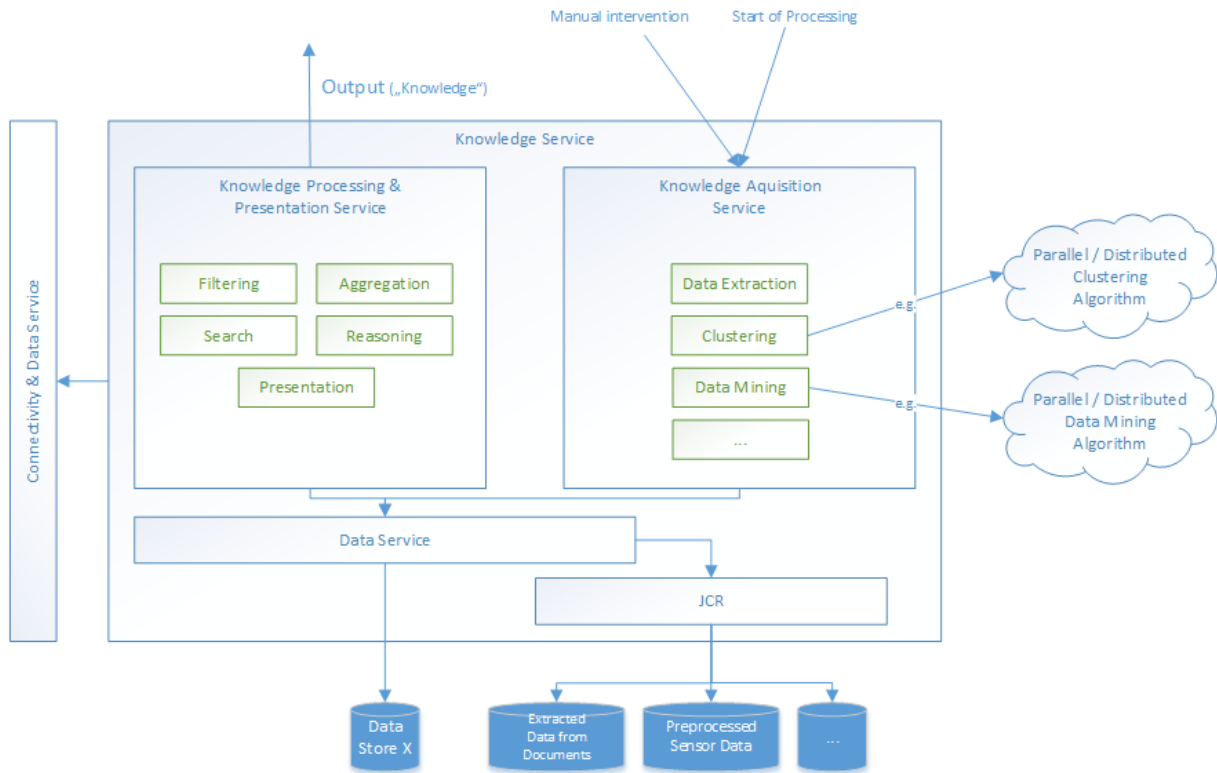
In the course of the CLAFIS project, the following modules were implemented as a proof-of-concept of the framework:

- Knowledge Extraction Module
 - Prototype for Chemical Documents (extraction of meta data of e.g. governmental chemical documents)
 - Extraction- and Search-Functionalities for PDF Documents
- Plant Protection Module
 - Calculation of Disease Pressure (ad-hoc or periodically)
 - DPM (Disease Pressure Model) developed by LUKE
 - DPM (Disease Pressure Model) developed by DACOM
- Cereal Maturation Module
 - Cereal Maturation Formula developed by LUKE

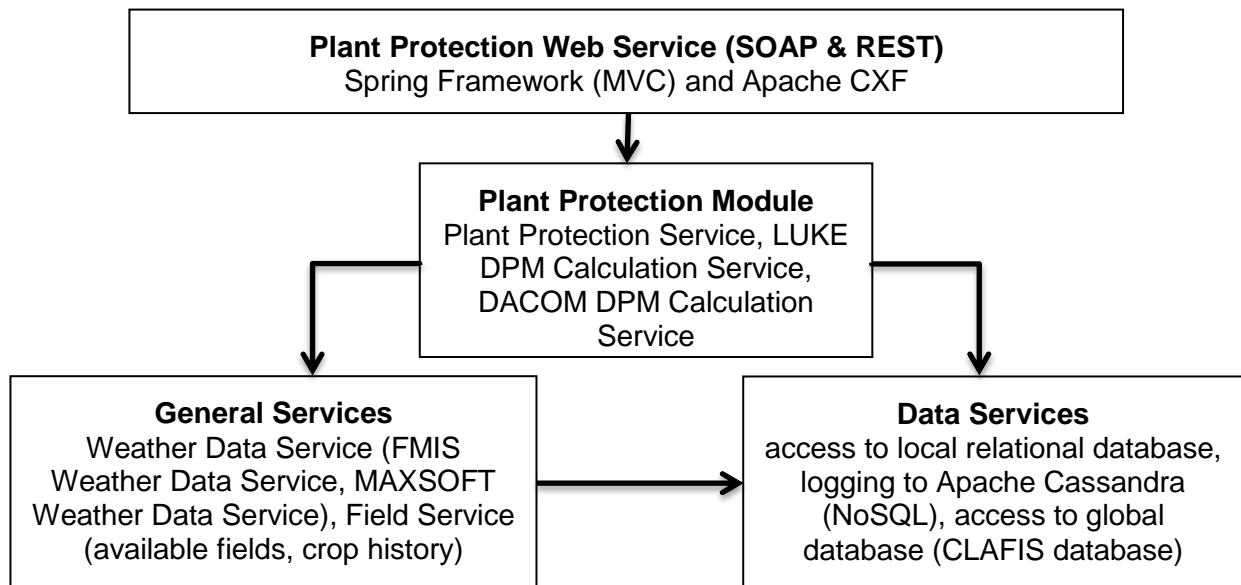


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Example: Plant Protection Module



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