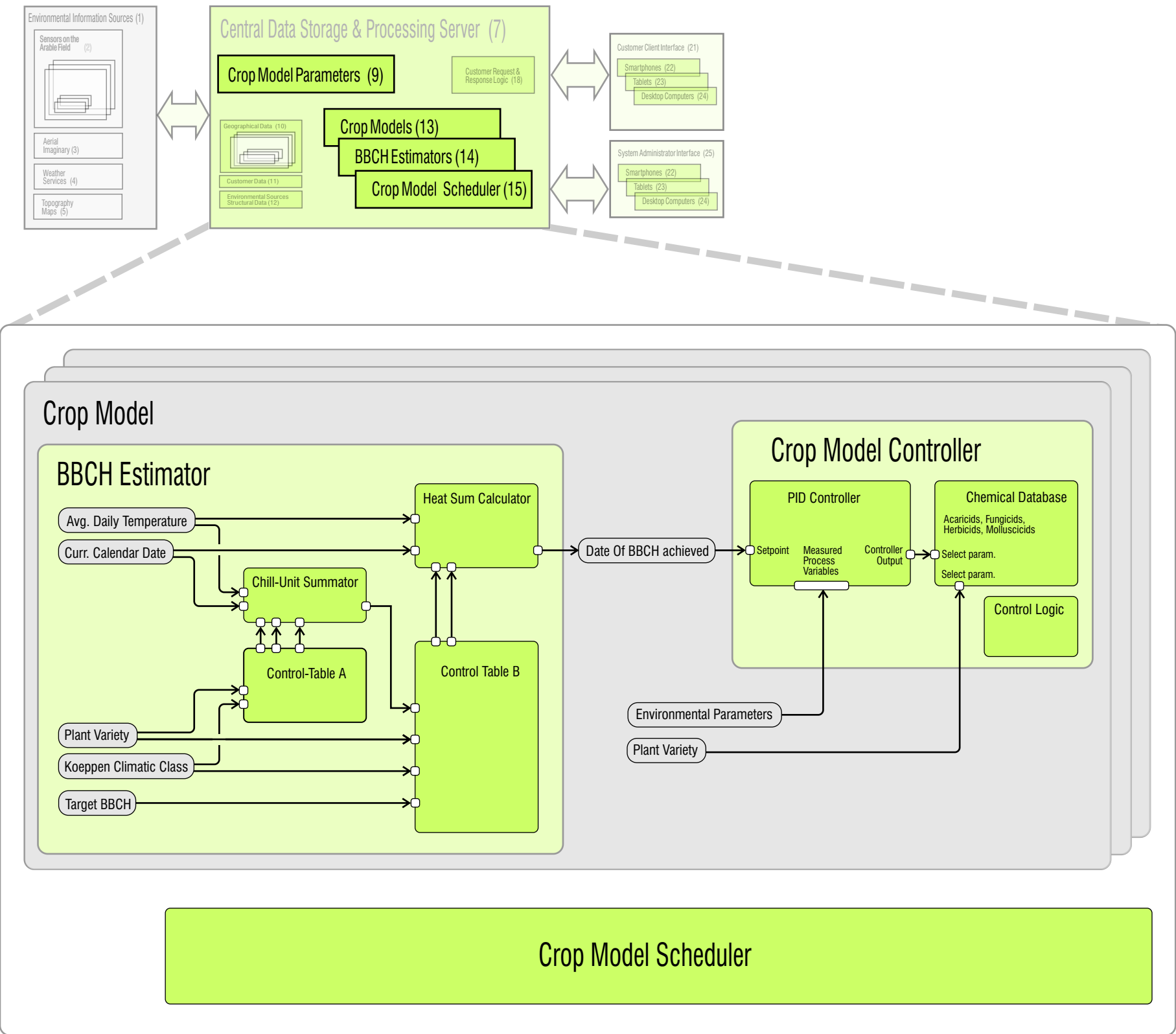


PODS — Plant Observer & Diagnostic System | Crop Model Overview



BBCH Estimator

The BBCH estimator provides actual BBCH values to several plant disease forecast models. The estimator should be run from late autumn to the end of harvest, parametrized with different input 'target_heatsum' values. The estimator uses two algorithmical steps:

Summarizing chill units (in cases of the annual plants, as well) from a 'starting_date' to the calendar date when the daily minimum air temperature does not rise above a given value. Doing that depending on the formal parameters 'variety_of_grapevine' and 'koeppen_climatic_class'.

Summarizing the heat_sum from the first day of the current year to the calendar date while the so summarized heat sum does not achieve the value of a given value. This 'target_heat_sum' is uniquely associated with a BBCH stage. The heat_sum grows continuously, so the current calendar date, when the previously mentioned match happens, is the output of the estimator.

Crop Model Controller

PID Controller (provides proportional, integral, and derivate calculations to make control actions)

Its setpoint is the estimated BBCH value provided by the BBCH estimator. The measured process variables are environmental parameters (soil/air temperature/moisture, solar intensity leaf wetness, rain precipitation, ...)

The controller output and the plant variety compose selection parameters to the Chemical Database to advice the customer.

Chemical Database

The database contains several types of plant protection chemicals (acaricids, fungicids, herbicids, and molluscicids). The database does contain detailed information (product sheet, approving date, price, ...) about each chemical items.

The *Plant Observer and Diagnostic System* ensures continuous actualizing of the database according to the official regulations.

Sophisticated **Control Logic** provides smooth communication between the software components and prepares the content to the customer interface.

Crop Model Scheduler

Provides regular running environment for the Crop Models: Each plant area on each estate needs dedicated crop model, according to the local plant varieties and environmental parameters.