|  |
| --- |
| PROJEKT1 SOFTWARE DOCUMENTATION V1.0 |
| C.A.A. January 10, 2023 |

# revision control

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Version | Author | Changes |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

SOFTWARE ARCHITECTURE document

## Architecture OverviewA screenshot of a computer Description automatically generated

Figure 1: Architecture Overview

* Type: Modular Monolith
* Public static components:
  + ErrorManager and/or Logger
  + DirectoryManager
* Components can be grouped into the following:
  + ServerComponents
  + DataBaseComponents
  + ProcessComponents
  + UIComponents
  + DeviceComponents

## DeviceComponents A screenshot of a computer Description automatically generated

Figure 2: Device Components Module

* Classes and related objects that handle communication with external devices connected to the PC should live in the Device Components Module.
* Common Classes include:
  + MotionController
    - To handle all motion related controllers and coordination.
  + SafetyPLC
    - To handle STO and other emergency stop situations thru a safety PLC
  + VisionController/s
    - To handle communications with vision inspection systems that may have an external controller.

## ProcessComponents

Figure 3: Process Components Module

* Classes and related objects that handle or affects the machine run, and the statistical analysis of the machine run should live in the Process Components Module.
* In general Classes and related objects fall into the following categories:
  + ProcessThreadHandlers
    - Contains code that runs the machine by coordinating station processes.
  + StationProcesses
    - Functions that coordinate devices to perform individual processes at individual stations on the machine.
  + Trackers
    - Tracks product/part transition through the machine.
    - Tracks Data for statistical purposes.

## UIComponents

Figure 4: UI Components Module

* Classes and related objects that handle or affect the user interface and experience should live in the UI Components Module.
* UI Components Module should have a singular DataModel that implements the INotifyPropertyChanged Interface.

## ServerComponents

* Classes and related objects that handle requests to and from an external Client or Server should live in the Server Components Module.

## DataBaseComponents

* Classes, schemas, and related objects that handle requests to and from the database should live in the Data Base Components Module.

# Technical design document

## A technical design document (TDD), also often referred to as technical specification, provides detailed, low-level information on how a software system's requirements are to be implemented. It bridges the gap between system architecture and the actual codebase, detailing the specific configurations, interfaces, and ~~coding standards~~ that developers will follow.

## A TDD includes component designs, data flow diagrams, algorithms, API endpoints, and interaction protocols, ensuring that developers have a clear and precise guide for building the software.