

Domain Model

Requirements

We are using AI for doing business tasks. Further actions will be triggered dependent on the output of the AI-task. We are aware, that the decision the AI made is not perfect and mistakes occur. We have an operator to handle this.

Two user stories can be defined for operator:

1. Configure Automation Flow

As a AI-Operator I want to automate incident detection and incident handling as far as possible with the help of AI. I am aware that AI-decisions can be wrong. That's why I want to be able to monitor and interrupt automated processes as it seems to be needed.

Acceptance Criterias:

- decisions and informations about them are displayed
- actions can be configured dependent on decision
- decision-action mapping is saved in a way, that it can be used for futher decisions with the same type

2. Configure Level of Automation

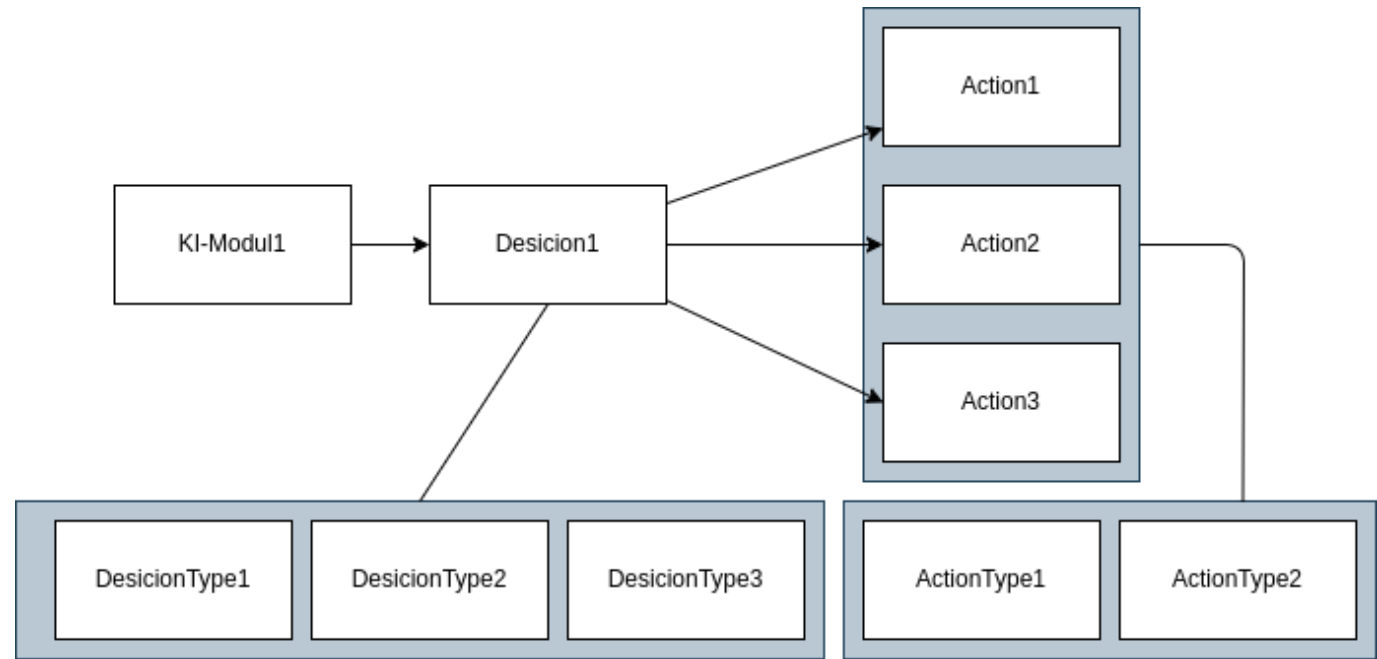
As a AI-Operator want to switch between different automation levels in order to skip automation and check the decisions made by AI. Depending on criterias like criticality or amount of mistakes, I want to align the level of automation for the action based on AI-decisions. I want to set a lower level of automation, if decisions were wrong. I want to set a higher level of automation if no mistakes can be found.

Acceptance Criterias:

- level of automation can be switched on action level
- automation levels and detailed description of the behavior can be shown
- dependent tasks (not in scope): concrete behavior, interaction and automation has to be implemented for each autonomy level

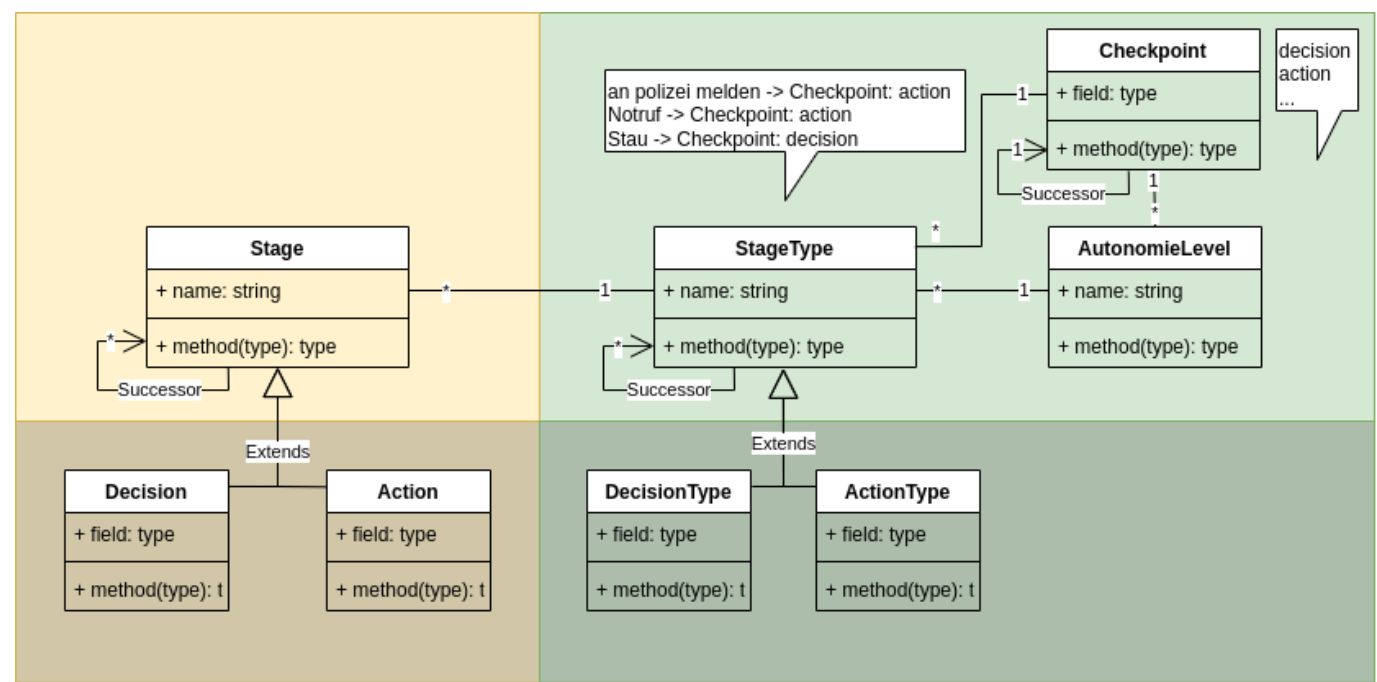
Important Design Alignment

We need a model of a non-trivial AI-output (e.g. classification) and a succeeding automation with more than one action:



Generic Model

The first idea is, to implement different stages which can have a different set of autonomy levels which leads to a generic and highly configurable model.



Stage (Modul):

- In case it is a decision or action, it is a concrete event and needs to have a timestamp.

StageType (or Classification?):

- Something where we can define an autonomy level for. Stages with the same StageType has the same autonomy level (E.g. Unfall, Stau for Checkpoint decision).

Level (Autonomy Level):

Autonomy level configurable via database

Checkpoint:

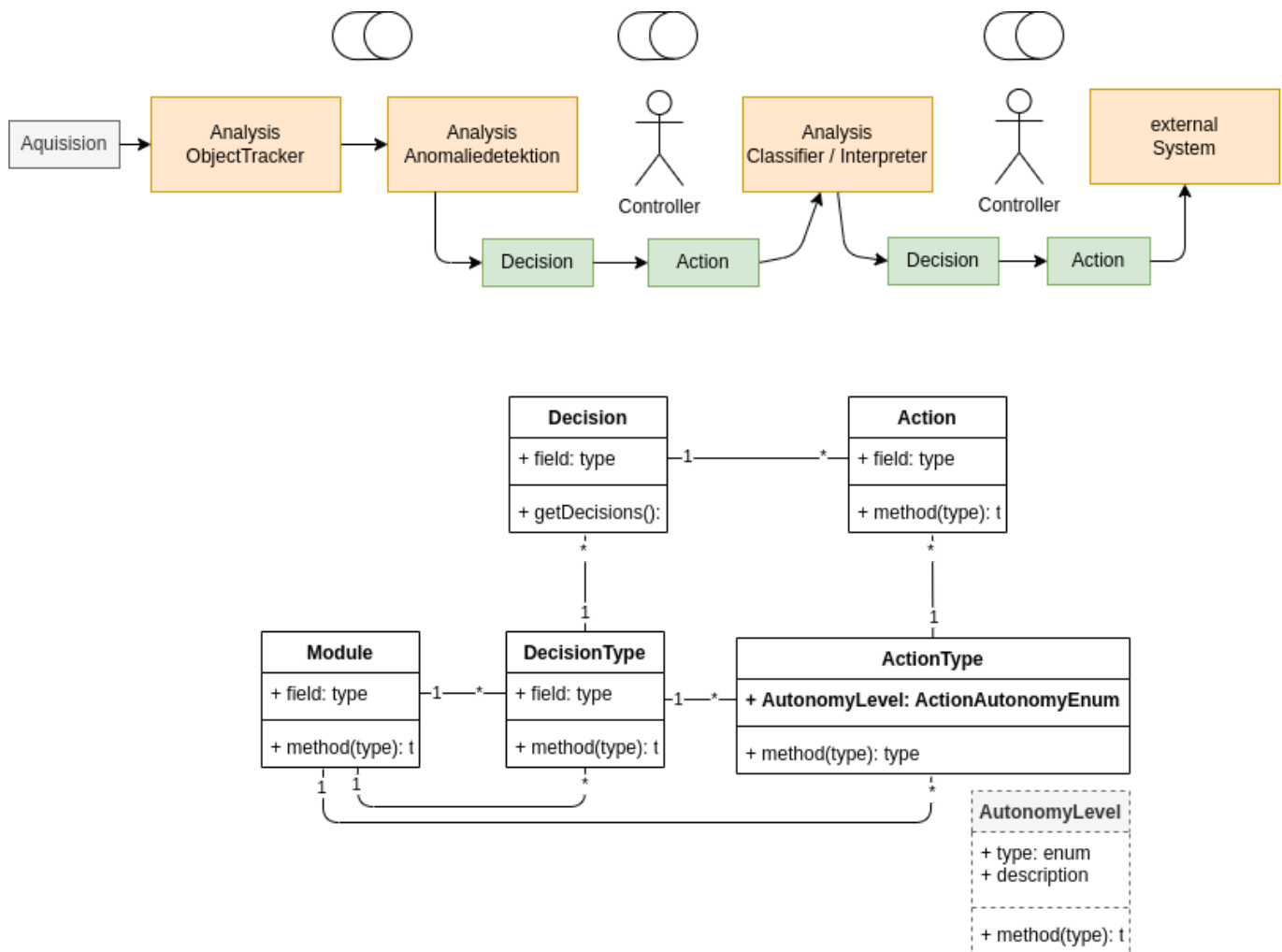
- Acquisition, Analysis, Decision and Action
- The point where we want to check automation with autonomy levels
- Defines the possible autonomy levels per StageType.
- Alternative: Enums are a programmatic solution instead of levels and checkpoints. Hence, you cannot configure the possible autonomy per StageType

Inherited classes decision and action:

- Examples for Stages
- Might be we will not need them, but they are helpful
 - to add special attributes for different checkpoints (e.g. timestamp)
 - to save different Stages (Acquisition, Analysis, Decision, Action) in different database tables.

Simplified Model

In fieldlab A, we are using only decisions and actions. So the question is, should we use a generic approach or a simpler one with concrete and known stages.

**Anmerkungen:**

- * wir brauchen das Metamodell mit ...Types
- * für unseren use case sind die Phasen Decision und Action relevant
- * Autonomielevel an das Modul zu hängen ist theoretisch möglich, erscheint nicht sinnvoll
- * je nach output der KI kann es auch nur ein DecisionType und ein ActionType für das Modul geben
- * wenn wir pro stage ein Autonomielevel implementieren wollen, brauchen wir entweder mehrere Enums oder eine separate Tabelle