



Quantitas
SOLUTIONS



Internal quality process

Our methodology to assure a prudent annotation result

Input quality data, output quality performance

Introduction

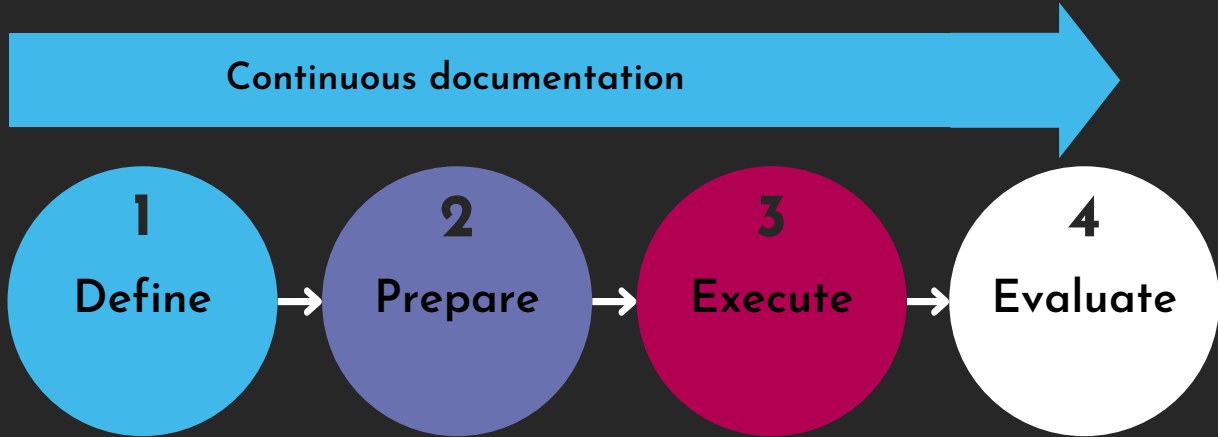
The foundation of your medical AI system is determined by the quality of the data input. It is crucial to use high-quality medical data with annotations of clinical standards.

Quantitas Solutions' annotation teams solely consists of Western European-trained and based clinicians that work on a regular basis in medical clinics. This way our teams have the unique ability to provide continuous up to date medical expertise.

This document elaborates how Quantitas Solutions ensures its unmatched quality in the medical annotation industry step-by-step.



The annotation process is split up in 4 phases. There is one continuous process that documents all processes.



Define - Phase 1

In the first phase, we become acquainted with our client's AI tool and their annotation needs. Together with the client, we define all project details to get a clear project overview.

Prepare - Phase 2

Followed by the second phase in which we start composing all relevant protocols and perform a pilot project.

Execute- Phase 3

After all preparations and refinements of training protocols, the annotation process is executed. During this phase, there will be fixed feedback loops and internal evaluation moments.

Evaluate- Phase 4

The last phase is to evaluate the annotations and the outcome of the AI tool. During this call, we will also discuss the role of Quantitas Solutions in future projects to improve the client's medical AI tool(s) further.

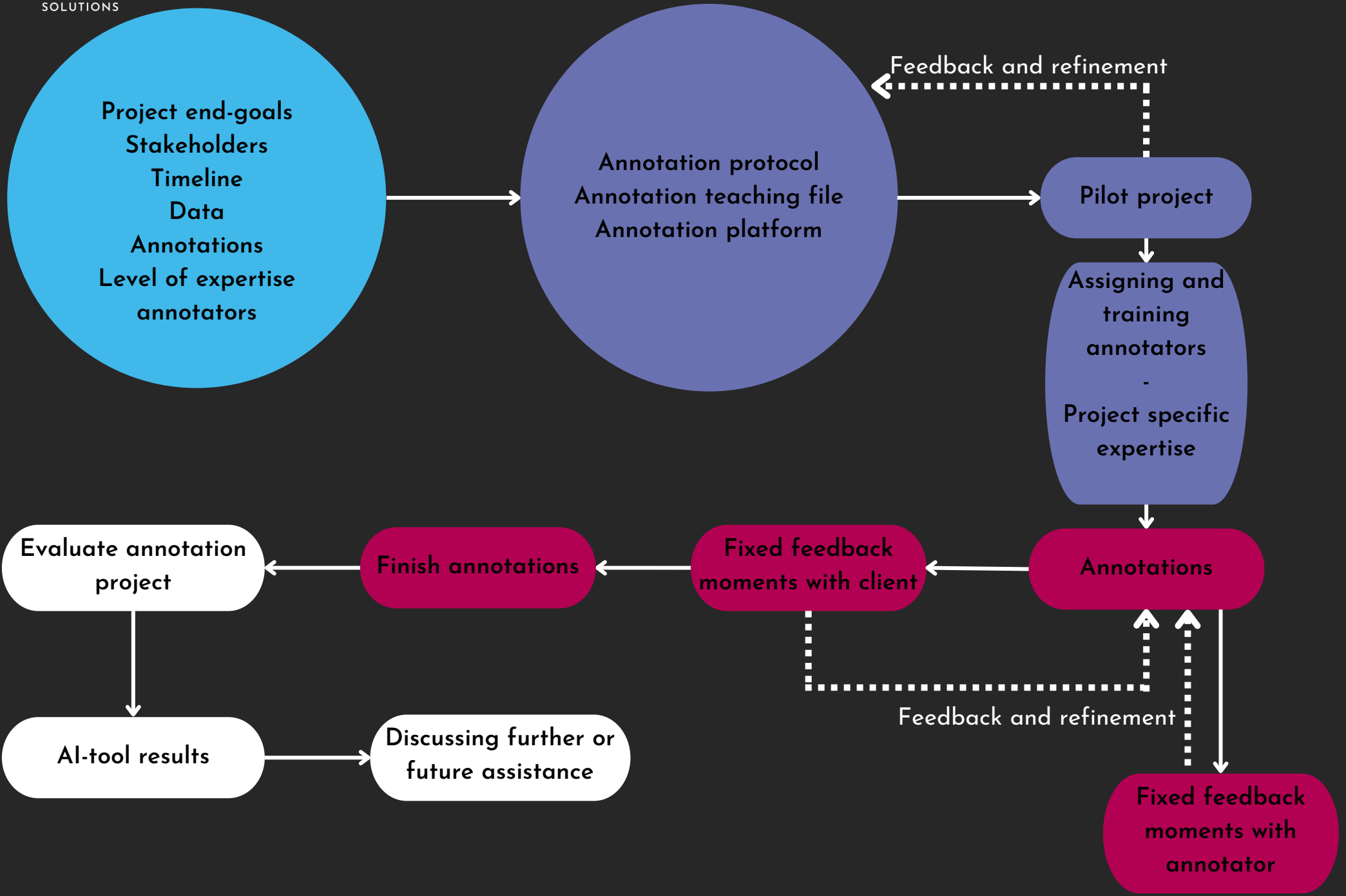
Documentation - Continuous

During all four phases, all relevant steps and activities are documented. This is Quantitas Solutions' methodology to provide transparency and accountability regarding the annotation operation.

Relevance

We understand that is tempting to rush an annotation campaign, but taking the time to optimize the workflow results in a better outcome of the quality and a reduction in cost.

Annotation project overview



Together with our client we define and summarize all project details in the first phase. This will be discussed in an online meeting with our Chief Medical Officer.

The project plan is fully customizable according to the client's requests in which we can advise accordingly. We focus on the following aspects:

- Magnitude of project and timeline
- Region of interest
- Type of annotation
- Level of expertise required
- Truthing protocol and teaching file
- Annotation platform
- Pilot project
- Feedback moments

Define - Quality metrics

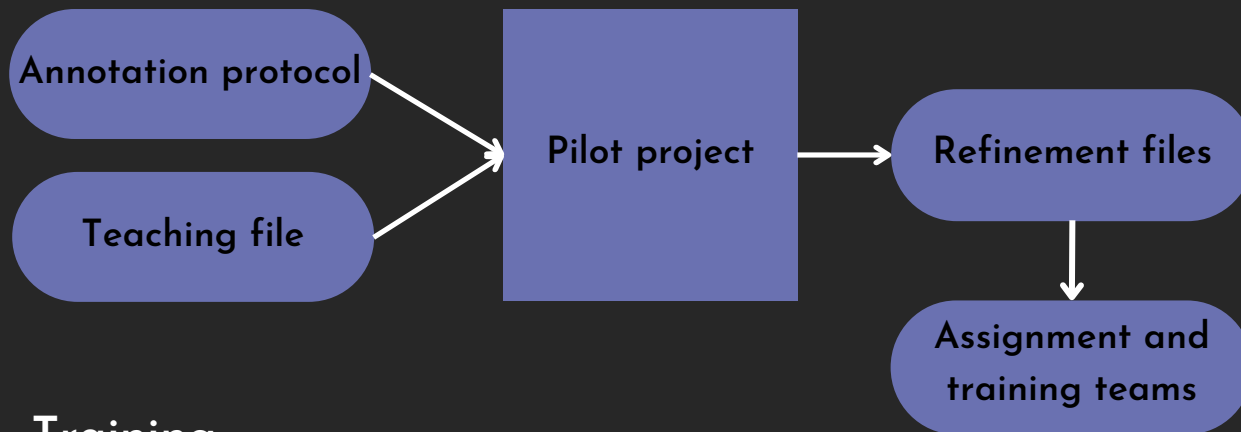
In conjunction with our client, we define the quality metrics by incorporating feedback moments. In order for the client to be in constant control of the annotation project. With a decreasing intensity of feedback moments and slowly speeding up the annotation process, we achieve the highest quality. A fixed contact person is available for the client to reach at any time in the project.

Pilot Project - Client

The first concrete step after we received an intended project overview, is to discuss in a call with our CMO how to shape the pilot project. The purpose of a pilot project is to test the truthing protocol, the teaching file and the usability of the annotation platform.

Pilot project - Executed and evaluated

The second phase of the annotation process is the stage where the pilot project is performed by an experienced annotator that will work according to the composed teaching file. The outcome of the pilot project will be discussed and feedback on the teaching file and annotation platform is provided.



Training

Most medical AI companies have experience with in-house annotations, making them familiar with typical "good" and "bad" annotations. These visual examples with explanations can be used as a teaching file for the training of our annotators.

Annotation teams - Assigning

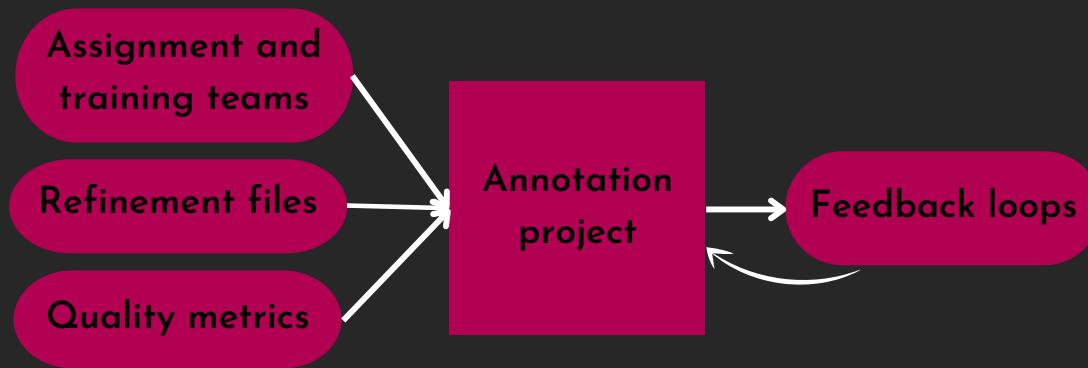
After finishing all initial training material, a team of clinicians is picked and are invited to a plenary session. Here our CMO goes through all the relevant information from the annotation protocol and the teaching file. The annotators are also communicating among each other, when hesitant about an annotation.

We provide our client the CVs and registration numbers of the clinicians involved.

Value

The advantage of this thorough preparation phase is a more effective output: resulting in higher quality and a reduction in cost.

During the third phase, the actual annotation process is executed. All annotators that are assigned to be a part of this annotation campaign are trained and assigned accordingly in the preparation phase. In the execution phase, there is an overlay with the evaluation phase. Since, fixed evaluated moments and interim feedback is given by the client and internally to ensure high-quality outcome.



Internal Quality check

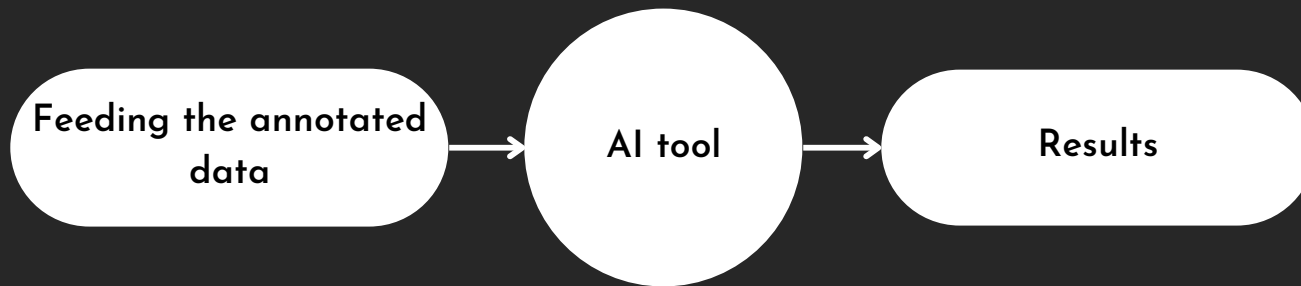
The performance of every annotator is reviewed internally after a set amount of work. The result will be discussed by our CMO and the supervisory level of expertise. If the review indicates that the quality can be improved, a personal improvement plan will be given and clarified in a call.

Feedback loops - Client

As agreed upon with the client in the preparation phase, fixed feedback moments are scheduled after a certain amount of annotated studies. In addition, informal review moments will take place continuously. The fixed contact person will be available to discuss these with the client during the project at any time.

The client always has the opportunity to put the project on pause during these feedback loops. Here, the client can check the results more profoundly and check the outcome in the AI model.

The evaluation phase focuses on the quality of the annotation of the project in its entirety. Here the client can take the time to check the outcome of the annotations and see the performance of the AI tool.



A call is scheduled in which the results of the AI tool are discussed and how the client experienced the cooperation. We provide this personal approach to our clients to establish long-term business relationships.

Services

Quantitas Solutions can provide more than annotations, we offer the following services:

- Feedback on the usability of the AI tool (incl. expert report)
- Providing the Ground Truth
- Quality assurance of existing annotations
- European raw medical data

Further improvement

If an even higher annotation outcome is requested, we can provide more expert clinicians to further improve the quality of the annotations.

During all 4 phases, all relevant information is continuously documented.

Define - Phase 1

In the first phase a high-level project overview is documented. This documentation includes the agreed upon quality metrics (feedback moments) and relevant specifications of the project.

Prepare - Phase 2

Here, the teaching file and the truthing protocol are finalized and registered. Also the outcome of the pilot project will be reported. Most importantly, the education level, work experience and registration number of the assigned and trained clinicians will be shared with our client.

Execute - Phase 3

During the execution phase, all internal and external evaluation loops with our annotators and the client, are documented. Moreover, The performance assessments and who annotated what scan is written down.

Evaluate - Phase 4

During the last phase, the result of the annotations is reported and a survey of how the client experienced the project is taken to further improve projects in the future.

Accountability

The client will receive a report of all documentation regarding: annotator selection, annotator CVs, annotator training, annotation audit logs and outcome of internal feedback loops.