1) **Select example anomaly to model**
   Start with more common anomalies then move to more unique ones
2) **Goal Model to Understand Anomaly Causes and Actors.**
   Evaluate existing general examples for similarity, either start with a General Anomaly Goal Model if enough actors or elements are similar, or start from scratch
   a) **Actors/Stakeholders:** The model should contain an actor representing the company who wants to understand the anomalies. Further actors, such as the primary operator or customer should be added. The questions below help guide the discovery of new relevant actors to add to the model:
      i) What actor is effected by the anomalies?
      ii) Who wants to find, monitor and understand the anomaly?
      iii) Is a particular actor causing an anomaly?
      iv) Where does the data about the anomaly come from?
      v) Who does something when the anomaly is found?
   b) **Qualities:** Determine which anomaly-related qualities the actors want to achieve. As inspiration, actors in the existing general models contains qualities such as reliable service, anomaly understandability, robust signal, reduce equipment returns, and improve root cause analysis search.
      i) What qualities apply? Who is responsible for monitoring these qualities?
      ii) What is the anomaly analysis trying to achieve? For whom?
   c) **Tasks:** Determine what each actor needs or wants to do to achieve their anomaly-related qualities or analyze anomalies. The example general models contains tasks such as run anomaly detection algorithm, take preemptive measures, and provide continuous data.
      i) What tasks apply? To whom do they belong?
      ii) What tasks exist for anomaly detection?
      iii) What tasks exist for monitoring and removing or reducing the effects?
   d) **Resources:** Identify the resources needed by each actor to perform their tasks. The example general models contains resources such as data, reports of anomalies, algorithms used to identify the anomalies. Resources can belong to an actor or can be part of a dependency between actors.
      i) What resources apply? To whom do they belong? Or does one actor depend on another for the resource?
      ii) What data is exchanged?
      iii) What analysis results are exchanged?
   e) **Links within actors:** The model contains links such as AND/OR to describe task-breakdowns or alternatives and contribution links (helps, but also possibly hurts, breaks, and makes) to show how elements contribute to qualities. Add applicable links to the inside of your actors to describe how tasks, resources and qualities are linked together.
      i) How are tasks refined?
      ii) How do the various tasks help or hurt the desired qualities? Do tasks have alternatives?
      iii) Do the qualities help or hurt each other?
      iv) How do tasks depend on resources?
   f) **Links between actors:** Actors can depend on each other for resources, or to perform task or even achieve qualities. Add any missing dependencies between actors.
      i) Do the actors depend on each other for further resources, tasks or to achieve any qualities? How are these elements linked within an actor?
   g) **Final Check:** Does the model capture the cause of the anomaly? Are the links and elements sufficiently complete to understand how anomalies are detected and understood? If not, iterate back to previous steps
3) **Class Diagram to Capture Anomaly Entities and Attributes.** Evaluate existing general examples for similarity, either start with a General Entity Model if enough actors or elements are similar, or start from scratch.
   a) **Entities:** The general models contain entities such as anomaly, different types of anomalies, KPIs, and Metric/Counters. Do these actors apply in your case? If not, remove or change them.
      i) What further entities are needed to describe the anomaly?
   b) **Relationships:** The general models contain relationships such as extends between different types of anomalies, or association links with multiplicities (e.g., a `KPI` has 1..* `Visualization/Plots`). Do these relationships apply in your case? Modify the model.
      i) What further relationships are needed to describe the anomaly?
   c) **Attributes:** The general models contain many attributes in the entities. For example, Anomaly has Informal Name, End User, and Source of Data, etc., while KPI has Technology, Direction, and Anomaly Score. Do these attributes apply in your case? Consider the attributes in each entity. If not, remove or change them.
      i) What further attributes are needed to describe the example anomaly?
4) Repeat steps 1-3 with more examples, expand and adjust instance models as needed.
5) Consider which changes to the models are specific to one example or general across many examples. Update or create general models for your domain to reflect new general knowledge.

Fig. 7: Method for Anomaly Analysis Modeling.