



Project Initialization Document

Implement a 3D viewer for X company

Problem definition¹

X company operates a busy container terminal. To optimize the workflow, company staff uses a simulation model of the terminal and runs virtual experiments regularly. This model has no GUI, can be configured with XML files (input) and produces activity reports as a result (output). Operators (users) reported that they would like to see the model objects while the experiment is running.

For this reason, X company initiated a pilot project that aims to create a 3D viewer that helps operators to observe their running models visually.

TBA got an offer to provide this application. Although TBA is giving you this job, it provides senior project managers to supervise your activity during the project life cycle.

Implement an eclipse plug-in using Java3D, which can display a virtual world made up of model objects configured in a proprietary XML file (object type, location, rotation, VRML, etc). Add controls to let the user define/modify the view (angle, distance) at which he is observing the model (possibility to move around in the 3D model using the mouse).

Expected delivery

- project plan
- specification document
- design document
- source code
- test document
- final report

¹ This is a fictitious task which primary aim is to help students to carry out all processes of project life cycle.

Detailed description

Project initialization (delivery: meeting minutes and project plan)

- Before starting the project organize a *kick-off meeting* (max 1 hour) and discuss the details of the project. All uncertainties concerning the problem should be discussed and at the end should be included in a document (called *meeting minutes*). You will send this document to the TBA project managers; they will review it and will answer to your questions (no more than 1-2 pages).
- During the meeting you should also provide a *project plan* by means of *effort (time)* you will spend for each task. The tasks will include: project management, specification, design, development, test, and report. Furthermore, all these tasks can be expanded in subtasks. After you finish this document please send it to TBA. (no more than 2-3 pages)

Specification (delivery: specification document)

- Write a specification (by means of requirement lists) with all tasks that need to be done for this project. Typical requirements are:

The viewer should be an eclipse plug-in, because it will be integrated with other development tools that recognize the same file format.

The model objects should be loaded from an XML file.

Model objects and their 3D representation should be loosely coupled.

etc.

This list will be evaluated by TBA project managers (no more than 2-3 pages).

Design (delivery: design document)

- In order to carry out the design you are encouraged to use *UML diagrams*. Although you can use most of the UML diagrams we primarily suggest the *use case diagram* (consider the requirements during specification), *sequence diagram* and *class diagram*. Write a document with all these diagrams and send it to TBA (no more than 5-6 pages)

Development (delivery: source code)

- Exploit any necessary package that the Java3D API provides.
- Use different classes to represent a model object and its 3D counterpart. There should be two parallel, loosely coupled class hierarchies.
- Experiment with 'moving' 3D objects in your virtual world. Achieve this by changing the location of a model object.
- The application must have a user friendly GUI.
- Keep in mind:
 - o the code should be well structured
 - o the code should be well documented

- use *Design Patterns* where it is possible
- The application will be reviewed (code) and evaluated by TBA.

Testing (delivery: test document)

- In order to test your code please consider unit testing.
- Write a test document (use the specification document - requirement lists) that contains all the specific tasks that you need to test before deploying your product.
This list will be evaluated by TBA project managers (no more than 2-3 pages).

Final report

- Review initial project plan
- User manual (no more than 2-3 pages).

Miscellaneous

Feel free to request support from TBA staff in any development phase.

All deliveries will be evaluated by project managers from TBA.