



## Implement a 2D road editor for X company

### Problem definition<sup>1</sup>

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. Currently this model can be configured by editing XML files (with a text editor), which is flexible but users reported that they would prefer a visual editor to perform the modifications.

For this reason, X company initiated a pilot project that aims to create a 2D editor that helps operators configure their 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, which allows the user to draw different objects on a graphical canvas using the mouse. Provide a palette to offer various objects (for example roads, buildings, vehicles) for drawing, and possibility to view/edit object-specific properties. Design a proprietary XML format to save and load the user's work. Design the application so that new objects can be added easily in the future.

### Problem owner

X company

### Expected delivery

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

---

<sup>1</sup> 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 editor should be an eclipse plug-in, because it will be integrated with other development tools that recognize the same file format.*

*Object properties should be listed in a standard Property Window.*

*The document should be saved in an XML file.*

*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)

- All drawable objects need to have a common ancestor, which provides an abstract *draw()* method that allows subclasses to draw themselves.
- Simple properties can be edited directly in the Property Window. More complex properties need special Property Editors.
- 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
  - o 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.