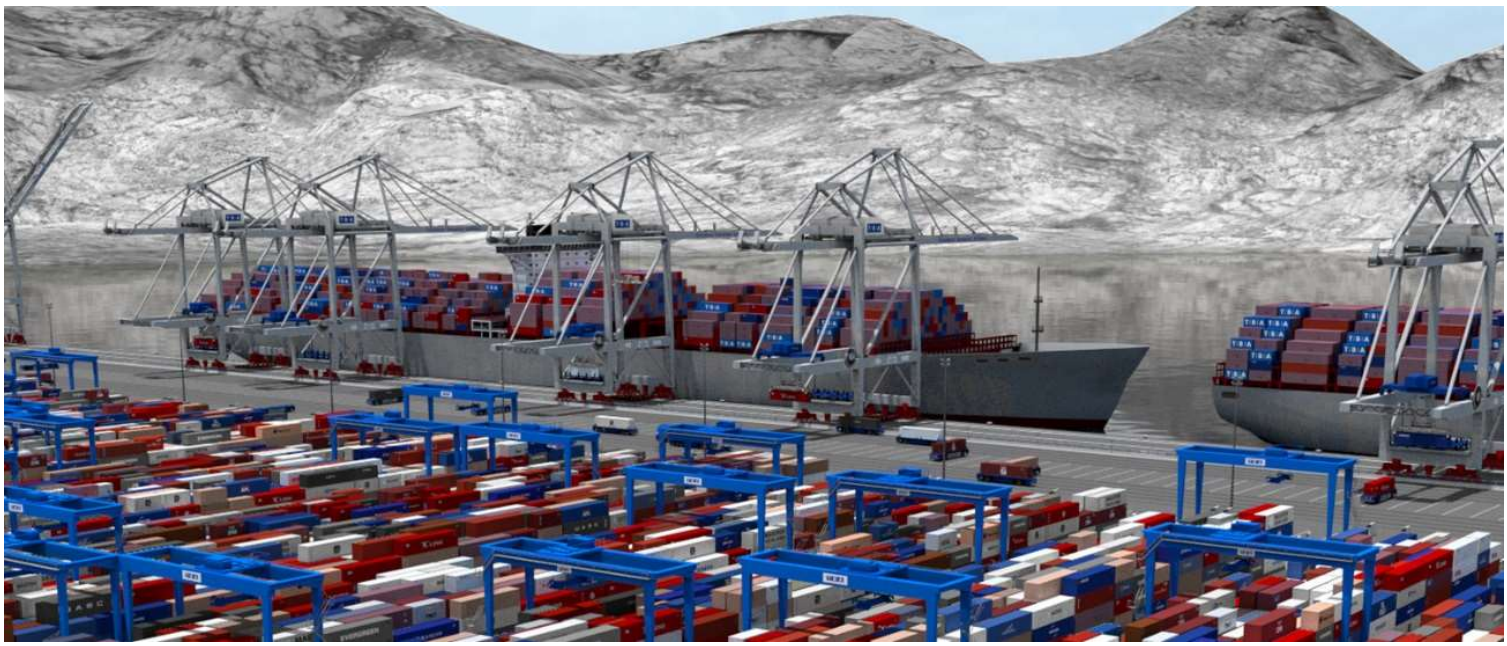
T|B|A®
Simplifying your operation

Delft, September 2019



# TBA Job Interview

## Case for Java Developer Position

## VERSION HISTORY

| Version | Author | Reviewer | Date | Comment |
|---|---|---|---|---|
| V001 | P.Bierhuizen | | 12/04/16 | |
| V002 | E.M. Coeveld | | 10/05/16 | Removed the delivery-deadline of April 21st |
| V003 | P.Bierhuizen | | 08/05/17 | Changed date and fixed typo |
| V005 | A.Timmermans | | 03/09/19 | Added two variant ASC |

## COMPANY VISION & VALUES

### We are...

... a group of compact, entrepreneurial and specialized companies that share the same vision and core values. What we are: free thinking and imaginative, able to develop solutions that deliver, time and again. What we're not: constrained by corporate politics and rules that stifle the creativity and productivity.

### We believe...

... that every complex situation can be made simple and safe: that simplicity lies at the heart of performance.

Thats why we strive to:

### Simplify your operation

| SUCCESS | TOGETHER | COMMITTED | HONEST | GROUNDBREAKING |
|---|---|---|---|---|
| We always strive for the best to optimize our client's success. Better performance at lower cost and risk show our impact. But success goes beyond. It's about happy clients that enjoy the comfort of complexity made simple. Clients who are in control and can grow their business in their own distinctive way. | The best performance is always the result of working together, our clients and us. We are connected; link people, businesses, operations and systems to get the best solutions. We believe in quality, not in hierarchy. Together and acting as a team, any group can stand any challenge. | We are passionate about clever, innovative solutions, that add value and performance to our clients' operations, at terminals and in warehouses. We are committed to our goals and tasks. We say what we do and do what we say. Colleagues and clients can count on us 24/7. We do not stop until we fulfil our promises. | To us, improving terminal and logistics performance is more a process than a project. We are aware of uncertainties and risks which we will encounter along the way, and will counter it with experience and knowledge. We believe in honesty as a condition for trust and successful partnering. | We challenge the status quo. We are curious and courageous, combine knowledge with skill. We recognize the differences between operations around the world and are able to respond flexibly to local requirements. We search for new, yet reliable and robust solutions that go beyond expectation. |

TABLE OF CONTENTS

1 TBA CASE ..... 5
1.1 OBJECTIVE OF THE CASE 5
1.2 USE CASES 5
1.3 ADDITIONAL INFORMATION 5
1.4 PLANNING 5
1.5 DELIVERABLE 6
1.6 TECHNICAL CONSTRAINTS 6

# 1 TBA CASE

## 1.1 Objective of the case

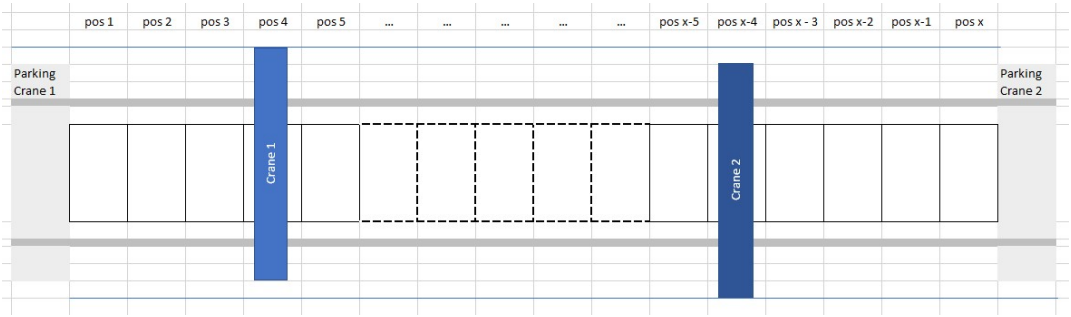
Build an application with moving cranes on a straight track (ASC), 2 per track, and user interaction.

## 1.2 Use cases

Consider the simplified drawing of a "Yard Module" below.

This module stores containers and which are put into the yard on positions using 2 cranes. On a typical container terminal, there are many yard-modules.

The containers can be moved into the yard from both sides. In the drawing you recognise 2 cranes that can move from each position to each second position. However, they cannot pass each other. That problem is what the TBA-case is about.




1. As a user, I want to be able to instantiate between 1 and X pairs of cranes from a user interface (one may be ok, but I may need more if I see that one is not enough)
2. As a user, I want to be able to move either one of the cranes from any starting position on the track to any end position over the whole length of the track, apart from the first and the last positions (parking locations).
3. As a user, I want the second crane to move out of the way if that crane is in the way of the of the first crane.

Optionally:

4. As a user, I want to see in the user interface where the vehicles are and how they are moving along the track (to validate where they are and how they are moving).

## 1.3 Additional information

The vehicles can be modelled in any way, as long as it is an independent process. You do not need to follow the laws of nature and vehicles do not need to interact with each other.

The console can be used for input and output, except when also implementing the 4th use case.

## 1.4 Planning

Spend no more than 8 hours on the case preparation.

Be sure to limit yourself to the development challenge of creating a working application. This means you have to make choices in what you will take into account and will not do.

If you have any questions, do not hesitate to contact us.

## 1.5 Deliverable

The expected deliverable is a program that can be executed and demonstrated/presented during the job interview.

We will be looking at:
- Architecture/design
- Documentation and maintainability of the code
- Creativity
- Process
- The result (did it fulfil the use cases?)

## 1.6 Technical constraints

The solution needs to contain at least:
- Java (JSE or JEE, your choice)
- Asynchronous communication between at least two processes
- Multi-threading
- Use a web-gui (for the 4th use case only)