Fundamentals of Software Engineering

(M1l322908)

Week 4 Lab Exercise: XP and Use Cases

This lab exercise is intended to give you some practice using the Agile process known as Scrum.

Haulage Contractor Scenario

Caledonian Quarrying and Haulage (CQH) currently have a fleet of 16 and 20 Tonne Tipper lorries operating throughout west central Scotland and into Northern England. Scheduling the operation of the fleet to ensure that lorries are used as efficiently as possible is a major task. The company owns a number of quarries across central and southern Scotland. The tipper lorries are typically used to deliver quarried stone from one of the Caledonian Quarries to a customer and to transport spoil from building sites for appropriate environment disposal. This generally requires the lorry to deliver the spoil to a landfill site or to a recycling centre for further processing. For example concrete and brick spoil can be crushed to provide material that is used for road bottoming and general infill work. The operations attempt to minimise the amount of time that a lorry is travelling empty. This may be the case when returning from a delivery to a customer's premises.

In an attempt to reduce the number of empty return journeys the CQH are considering buying a tracking system which will require each lorry to be fitted with a GPS system. This system will relay the position of the lorry back to the control room where operations staff will be able to see the location of each lorry on an on screen map. When jobs are received which require a lorry to go to a particular location the information provided by the tracking system can be used to schedule a pick up from the most appropriate vehicle.

Each lorry has a "home" quarry and starts and finishes at this location each day. Generally a driver is given a schedule each day. The schedule is collected at the start of the shift. The idea is to "dynamically" schedule the lorries to take into account of new work that comes in on a particular day. For example if a lorry has just tipped a load of stone at a building site in Bigger and is due to return to the Quarry in Coatbridge and a job comes in to pick up some spoil from a building site in Lanark then the truck would be dynamically scheduled to go to Lanark. Another truck would then be rescheduled to complete the job that the truck in Bigger was supposed to do on its return to Coatbridge. The GPS angle come in because it is essential If you look at a map you will hopefully get the idea.

1. Using Scrum as your Agile process produce an initial product backlog for the application that was discussed in the Scenario that you were given.

2. Once you have produced your initial Product backlog assign some form of ordering to the features that you have identified.

3. Now take the top 5 features that you have identified and produce XP style story cards

4. Now take the top 5 features that you have identified and produce XP style task cards

5. Now take the top 5 features that you have identified and produce XP style test case descriptions.

6. Now take the top 5 features that you have identified and produce Use Cases for each one. This should include appropriate Use Case Textual Descriptions.