Scenario

Outdoor advertising incorporated are building a state-of-the-art scheduling platform that will take our digital offerings to new levels.

The Centralised Technology Group (CTG) are a centralised group responsible of delivering all products to the business and are undergoing a process of taking disparate solutions from our individual international business units (BUs) and creating centralised solutions that are shared.

We currently have 3 business units the UK, Belgium and Sweden, all units currently have their own solutions, and their own technology teams.

All BUs are used to products being developed in a waterfall model. They see previous development efforts of CTG as underdelivering, always being late and not being focussed on their needs. The BUs technology teams feel that the CTG are disengaged and build solutions that are theoretical rather than practical.

CTG are looking at developing a new centralised scheduling platform for managing advertising on our embryonic digital panel estate.

As part of Outdoor's values BU's have the ability to develop their own solutions with their own teams. This has resulted in all BUs having their own scheduling solutions these are disparate using different technology stacks, hosted on premise or within cloud environments, but they currently don't support changes of legislation which stops certain type of advertising being advertised close to children (i.e. You can't advertise unhealthy food choices to panels near schools). To achieve this all BUs accept their current solutions would have to be rewritten.

To develop the product the tech team have been in discussion with BUs and have received basic requirements from the business.

Criteria

All countries use the following criteria

1. Each country has 8 panels
2. Each country is broken down in 2 regions
    a. North – Panels 1,2,3,4
    b. South – Panels 5,6,7,8
3. Each country only stores 7 days of advanced scheduling data
4. Each panel can support the following restrictions
    a. Healthy ads only
    b. Unhealthy ads only
    c. No restrictions
5. Panels can be in 2 operational states
    a. Working
    b. Not Working
6. Each country will need to manage restrictions and operating states on panels
7. No panel in the same region (North or South) can contain the same ads in the same time. E.g. The same advert can't play on panel 1 and 2 in the morning. However, the advert could play on panel 1 in the morning and panel 2 in the afternoon.
8. There are only two ads MegaBurger (Unhealthy) and CrispySalads (Healthy)

UK

1. Have categorised all the panels based on location.
2. UK current system currently supports 2 hourly time slots, but they are willing to change this.
3. UK panels NEVER fail.
4. UK want to support 2 hourly time slots, although their advertisers will only use the following slots

   a. AM (0000-1159)
   b. PM (1200-2359)
5. UK are planning to have a 3rd ad over the next few years.

Belgium

1. Have not categorised their panels based on the restriction of ads.
2. Currently support 2 time slots
   a. AM (0000-1159)
   b. PM (1200-2359)
3. Panel 4 and 8 are vandalised regularly and are low revenue generators. They will need to be taken out of the schedule when they are non-operational.

Sweden

1. Have categorised all the panels on where they are located
2. Currently support 2 time slots
   a. AM (0000-1159)
   b. PM (1200-2359)
3. Sweden are planning to change the restrictions on a panel (depending on time of year), but restrictions cannot change unless there is no future content scheduled.
4. Swedish panels NEVER fail.

Tech Lead

Given the requirements

- Implement a small working coding exercise by using the following technology stack: Java, MySQL, Hibernate, Rest API, Spring core, a Mocking framework of choice
- Implement following a TDD approach
- Check in code to GitHub Repo (Please create new repo)

1. Define the basic entities and build a skeleton CRUD REST API for those entities.
2. Build a skeleton REST API and add the pseudo code in comments that perform the following operations: -
    a. Add a restriction to a panel
    b. Read a restriction from a panel
    c. Delete a restriction from a panel
    d. Update a restriction from a panel
    e. Add a panel to a region
    f. Read a panel from a region
    g. Delete a panel from a region
3. For at least one entity on a create could you write a single unit test to ensure the item has been created.

Note:

1. Do not develop any UI but implement only a backend API solution to solve the problem.
2. Use appropriate properties for items and order.
3. Use Json or Xml data format for representation.
4. Check in incremental code development in GitHub.
5. Share GitHub link for solution

Prepare to discuss your code, discuss potential ways of hosting and deploying the solution. Talk us through any assumption you would have made.

As we have very little Agile delivery experience and we are going to be using Agile explain the following

1. What challenges we would have in trying to delivery this using Agile?
2. What recommendations in terms of personnel in the team?
3. How would you monitor quality of the teams' delivery?
4. How would you support developers who were finding things tough?
5. How would you ensure reliable code was released?
6. How would we achieve rapid iterative development? Is there anything that could help? In terms of check in processes etc.