Linnéuniversitetet
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Assignment

First Level Decompositions

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Assumptions

For this assignment I will make some assumptions to be able to make more precise decisions.

This project has been asked from the board of the National League of Gymnastics, NLG for now on, to our software consulting business. This is one of the first steps of the project.

First-level decomposition for the system

This first level will discuss the stakeholders, system concerns, view and description of the view

Stakeholders

The stakeholders detected outside our consulting firm are:
-   Customer: Board of NLG
-   Users:
    -   NLG Season Manager
    -   National Team Manager
    -   Judges
-   System administrator: Maintainers

Inside our consulting firm we are:
-   Project Manager
-   Architect
-   Developers
-   Business Manager

Concerns

Our customer wants a system with the ability to manage on-season and off-season gymnastic meets, including the management of scores, teams and equipment. It has to be ease to use and modify, has data accessibility for the records and deployed as soon as possible to configure the teams on time for the next season.

Our end users want the system to be ease to use, utilization is high priority to them, also they want data accessibility when getting scores.

The rest of the software related stakeholders will want a system ease to implement, agil and modificable.

Our Business Manager wants high functionality with the lowest cost possible, as always.

Decisions

As architects we can see that the NLG needs the system deployed as soon as possible. We need to work in Agile, make short deployments and revisit/test the architecture each spring. Change is basic in Agile, so I am going to create a module structure to have a component view that will help to document the system and foresee changes on the system when adding more functionalities.

A component-connector structure is not required at this moment of the life cycle of the project but it may be soon needed to check the security and performance of the system, but I need more information from our developers and business manager. Neither allocation structure is needed until our Business Manager gives confirmation on the cost of the project. This influential members of the project constraints this moment to a simple module structure that will work as scaffolding for the project.

To decompose our concerns, I will divide our concerns into view, logic and persistence elements. View can be divided into front-end view element and client-side web development. The logic element can be divided into business logic, live communication with websockets, security, hardware services for physical cards and RDIF/NC technologies. Persistence will manage the database.

View

As a first step to communicate how the system will be structured to all stakeholders, I will create a Component Diagram that will not go in deep, but try to cover most of the main concerns while keeping it as a skeleton, assuming that it will grow. For instance, it is expected that the number of users grow, adding coaches, team leaders and even letting members to modify their information through our application, adding equipment management with cards, tags or QR coding to keep track of it.

Component Diagram
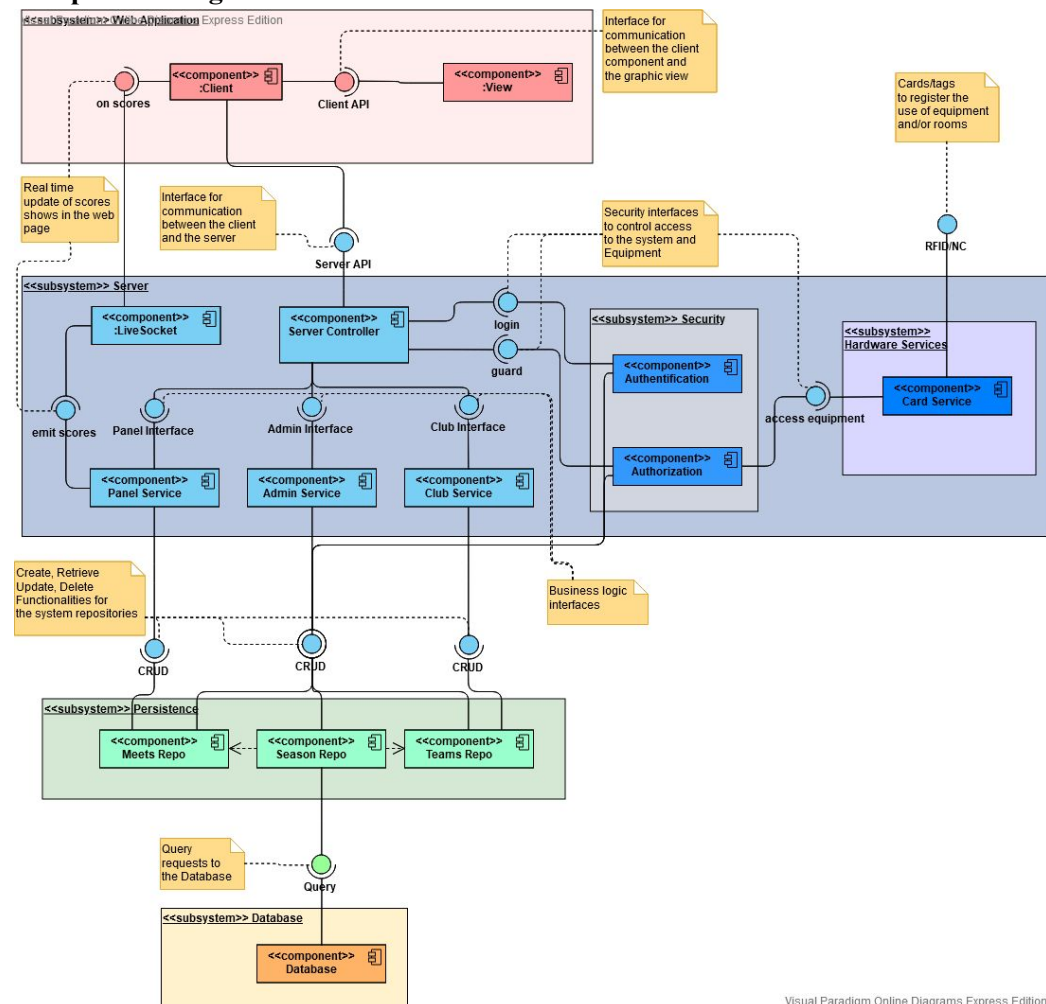
First-level decomposition for the physical system

Description

Following the decomposition of our system, it will be required a main server for our application that will contain a server running the execution environment decided with the development team. This server will need a connection with the database server to manage the data. The view of our application will be a web application that will run through TCP/IP and run with a client side application. One of the concerns was having the possibility of getting live information of the scores, so a websocket team will keep this information live and I expect this team to grow on functionalities. I will also require card readers that run on RFID technologies with cards for some members of the NLG to keep track of the equipment used. The readers need to be connected to the Internet so the system can update and/or modify the authorization level accepted by the reader. This could be changed to devices that are not connected to the internet, but have an ethernet port to do it manually by our system maintainer.

Deployment Diagram