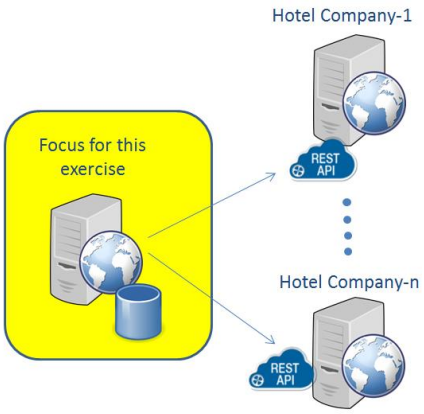
Subsystem interfaces

General part

- Describe shortly how REST and DTOs can be used to encapsulate subsystems.
- Elaborate on how JSON or XML supports communication between subsystems, even when subsystems are implemented on different platforms.

Practical part

Imagine a company, that could fetch and present information from most of the world's large hotel companies (Hilton, Marriot, Scandic Hotels etc.) as sketched in this figure.



Everything you have to do for this exercise relates to this company (the yellow part). That is you don't have to implement any of the hotels servers (but you do have to consider how they will supply data).

You must implement the server using Node/Express and MongoDB.
You can use the seed supplied in the file https://github.com/Lars-m/ExpressAngularSeed as a starting point.

1) Come up with a simple REST API which if implemented by all hotels, would make it possible to request the number of hotels they have in a given city. If a company has no hotels in the city, it should return 0.
2) Implement a Mongoose Collection that could hold information about all hotel companies. As a minimum you must store the name of the company and the URL pointing to the REST API defined in part 1
3) Set up a few sample hotels, using dummy URL's in your Mongo Database
4) Implement a simple façade on top of your Mongo Database that can fetch a list with information related to each hotel company in the database.
5) Implement a REST method which, when called with a city as argument, will return a list containing all hotels from our database and the number of hotels they offer in that city.
    - You should write the actual code to do this, as if the URL's were real
    - Show how you can execute the code, and fake a response for each of the hotel URL's in the database[1].
    - Figure out how to handle the "calling many asynchronous services" problem from your REST method[2]
6) If you have time only (pick only one):
    - Clean up the seed to reflect the actual application
    - Implement a simple Angular page that could request info for a given city and present the result to the user.

[1] You can use the **nock** package for this task: https://www.npmjs.com/package/nock
[2] You can use the **async** package for this task: https://www.npmjs.com/package/async