MUNI FI

Laboratory of Service Systems

Smart Service Project

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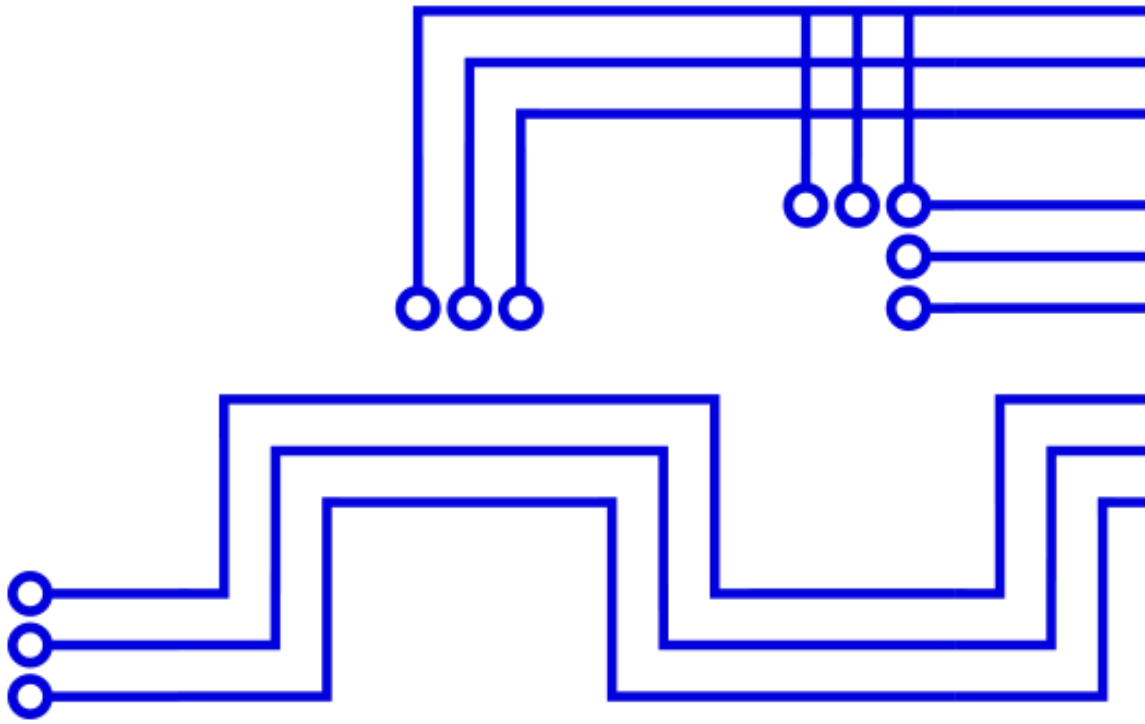
PA181 Services - Systems, Modelling and Execution



Important project info

- The project must solve a **real problem**
- It is highly recommended to **use Open Data** in your project (will be described in the last lesson)
- Project must have clear **description of the value** for potential users
- The project consists of two parts: **demo and report**
- The project can be done by a group of max 3 people. If you've done the project in a group, please **write down who did what** in your project report.
- The demo should be **developed and deployed on IBM Cloud.** In case you choose other cloud solution, you need to describe why and guarantee access for the evaluators
- The demo should be **functioning,** and available for the evaluators to try (e.g. through a link).

Structure of the project report

You don‘t need 100% follow this structure, feel free to add something that suits your project

1. Project title
2. Scenario
   - The problem you would like to solve
   - What data / datasets you need for solution
   - The way how you verified that there are not any other applications with the same solution, or why are the other applications not suit able
3. Modelling – model the Scenario
   - Business model (Canvas or Lean Canvas)
   - Smart Service Canvas (mentioning all important contexts)
4. Service used from IBM Cloud
   - Introduction for each service
5. Screenshots of the application, description, and a link to the functioning demo
6. Report Summary and who did what!

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Example project 1

Bike rental service

1. Bluemix

IBM Bluemix is great cloud solution for creating applications. This platform offers two cloud computing models: platform as a service (PaaS) and infrastructure as a service (IaaS).
The main focus of IaaS is to provide virtualized resources such as storage, power or networking for the organizations without its own computing capacity. These resources can be accessed and managed via internet.
On the other hand PaaS is used by the developers to support the whole lifecycle of software. The whole platform provides mechanisms for building, deploying, running and managing applications on the cloud. It also provides large variety of services which can be directly used inside of your application.

Example

2. Scenario

Imagine living in the Brno, city with the great bicycle infrastructure, beautiful scenery and a lot of interesting places which you could visit by bicycle. Nevermind if you don't have your own bicycle, our service Bike-Rental is ready to serve you. We provide set of bicycles which are situated in different parts of the city. You can visit our web page to see which bicycles are available and which one is the nearest to you. Once you pick the right one for you, all you need to do is reserve it via our simple reservation form and you are ready to set of to the trip. The reservation is important step because it makes the selected bicycle unavailable for the others so you don't need to worry about someone taking your chosen bicycle in front of your eyes. Our service also provides you information about the weather for the next day, so it can help to better plan your trip.

Whenever you are done with biking there's not much work to do. Just revisit our page, fill the bike return form and that's it! The system recognizes that bicycle is available for another user and displays it again on the map. How simple is that? The best part is that you don't need to go

Example

3. Application

The application is available on the following address: https://nimbusxy.mybluemix.net/
It consists of one homepage and two subpages. The whole design is trying to be as simple as possible, so it's easy and straightforward for usage.
There are multiple main elements on the homepage (from top to the bottom): forecast, map, reservation and return form button and feedback collector. Map is displaying bicycles which are currently available for rental. To rent one of them user needs to click on 'Reserve your bike' button. He is redirected to the reservation form where he needs to put first name, last name, e-mail address and selected bicycle. After successful submitting of the form the homepage is displayed with information message. To free some of the bikes user needs to click on 'Return bike' button and fill the form with rented bicycle. After submitting he's also redirected to the homepage and returned bicycle is displayed on the map.
The homepage also contains feedback section which serves as a feedback collector from two channels: Twitter and e-mail. These feeds provide us information how we could improve our

Example

4. Used Services

Device simulation

Source of all information about bike is GPS sensor embedded in bike construction. Beside location information, latitude and longitude, sensor provides timestamp of measurement and bike velocity. If some damage of bike occurs, device can alert by emitting of damage signal. Signal is caused by pressing of special button directly on bike.
For simulation of such device we used function node from Node Red modeller. Function node contains script which is periodically invoked. Script returns Json that contains all mentioned data. Data are stored in MongoDB and sent to IBM Watson IoT Platform.
In IBM Watson IoT Platform we can visualize IoT device activity. For evidence of bike damages, we utilized possibility to create rule based on property value. When device emits damage signal, alert is automatically visualized in Rule-Centric Analytics Board and notifies person in charge.

Example

Wheater

Another feature that our application offers is a weather forecast. Now it only supports forecast for next day, but this service is quite good scalable and we can extend it in future. Despite of fact that there are countless online services, that offer weather data and forecast, we had chosen the one from BlueMix - mainly because of its integration with Node-Red.

Social Feeds

We are catching twitter posts with #bikeme hashtag so we can display what our users thinks about our services. Moreover, we had also created an email bikeme@mihalech.com, where our

5. Our team

- Integration with MongoDB and Mysql
- Twitter, email and weather functionality

- IOT - GPS sensor device simulation in Node Red
- IBM Watson IoT Platform - device integration, cloud rule creation (damage notification)

- Google Maps integration
- Front-End for reservation and return page

Example

Example project 2

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Example

Application scenario

Get feedback - Emoting app is designed for getting feedback from the audience. It can be used in public presentations, or even in airport or retail shops to see if our customers are content with the service. So, by simply asking a questions we can get feedback about their experience.

This application uses:

1. IBM Bluemix OpenWhisk to host the backend
2. Cloudant to persist the data
3. GitHub Pages to host the frontend

We used OpenWhisk as a backend as a service. It offers a solution to deploy an app with no server to maintain and also helped us to :

- Create a new question
- Retrieve the question to collect feedback
- Record the answers
- View the results.

Example

Applications and services

OpenWhisk - a cloud-first distributed event-based programming service. It is serverless, open source cloud platform that executes functions in response to events at any scale.

Cloudant NoSQL DB - is primarily delivered as a cloud-based service. Cloudant is an open source non-relational, distributed database service of the same name that requires zero-configuration.

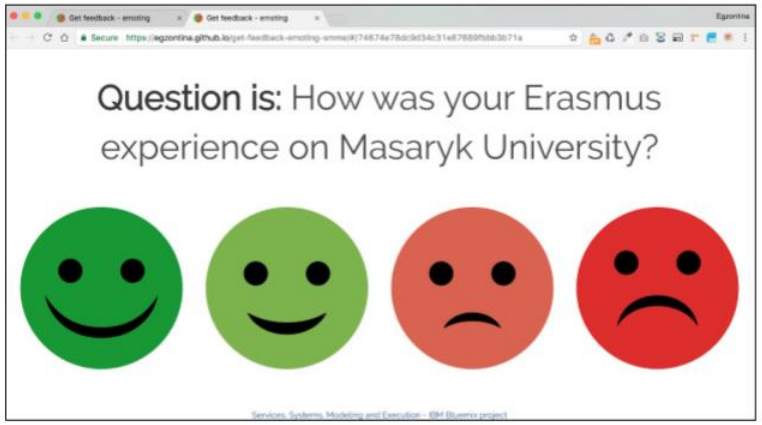
GitHub Pages - We used the GitHub Pages to host and publish our static website. The dite par is stored under the *docs* folder in the master branch of the project, the static assets are served by GitHub Pages.
The GitHub repo can be found here.

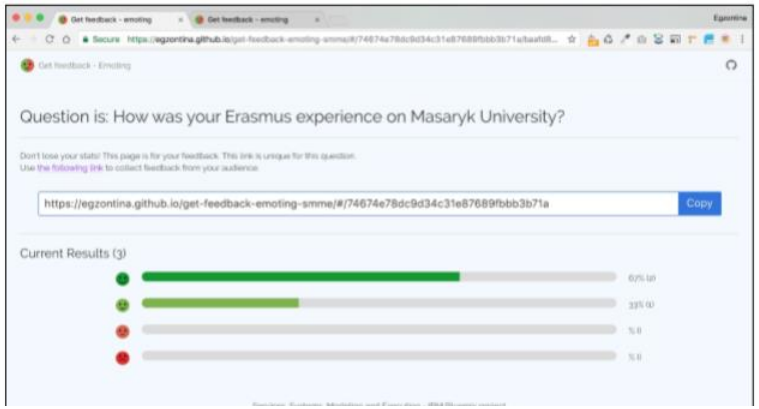
Example

Snapshots

- You could also include application Screenshots to the report

Example





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IBM Presentations

- The date of presentations and the deadline for the project reports will be announced in the week: 8.5. - 12.5.
- The term will be in second half of June