Research document existing software



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**definition of done:**

* Provide a research document which analyses the following aspects of the existing code
  + scalability
  + expandability
* give advice for future implementation of these systems

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# What software programs/code does USPC already have, what do they do and are they scalable and extensible?

Given the provided one drive repository we found the following software solutions/ programs

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| --- | --- |
| **Project name** | **link** |
| Proof of concept website | [Bmx-in-motion](https://innosportslab-my.sharepoint.com/personal/info_innosportlabsportenbeweeg_nl/_layouts/15/onedrive.aspx?originalPath=aHR0cHM6Ly9pbm5vc3BvcnRzbGFiLW15LnNoYXJlcG9pbnQuY29tLzpmOi9nL3BlcnNvbmFsL2luZm9faW5ub3Nwb3J0bGFic3BvcnRlbmJld2VlZ19ubC9Fb1JsWk9OSGVlbEVzenZoTzFvMTVaMEJidXlDZG5MWW1JZERfNzNoTzZHTnp3P3J0aW1lPVlrM084X0RlMkVn&id=%2Fpersonal%2Finfo%5Finnosportlabsportenbeweeg%5Fnl%2FDocuments%2FMedewerkers%20InnoSportLab%2FUSPC%20%2D%20general%2F3%2E%20BMX%2FSMC%20Sensor%2FBMX%20In%20Motion%20%28Arno%20Borgers%29) |
| Mqtt local logger | [Programma-Jesse](https://innosportslab-my.sharepoint.com/personal/info_innosportlabsportenbeweeg_nl/_layouts/15/onedrive.aspx?originalPath=aHR0cHM6Ly9pbm5vc3BvcnRzbGFiLW15LnNoYXJlcG9pbnQuY29tLzpmOi9nL3BlcnNvbmFsL2luZm9faW5ub3Nwb3J0bGFic3BvcnRlbmJld2VlZ19ubC9Fb1JsWk9OSGVlbEVzenZoTzFvMTVaMEJidXlDZG5MWW1JZERfNzNoTzZHTnp3P3J0aW1lPWZ3TkZBX0hlMkVn&id=%2Fpersonal%2Finfo%5Finnosportlabsportenbeweeg%5Fnl%2FDocuments%2FMedewerkers%20InnoSportLab%2FUSPC%20%2D%20general%2F3%2E%20BMX%2FSMC%20Sensor%2FProgramma%5FJesse%2Fapplication%2Ewindows64) |
| Mqtt sensor Logger | [“Python”](https://innosportslab-my.sharepoint.com/personal/info_innosportlabsportenbeweeg_nl/_layouts/15/onedrive.aspx?originalPath=aHR0cHM6Ly9pbm5vc3BvcnRzbGFiLW15LnNoYXJlcG9pbnQuY29tLzpmOi9nL3BlcnNvbmFsL2luZm9faW5ub3Nwb3J0bGFic3BvcnRlbmJld2VlZ19ubC9Fb1JsWk9OSGVlbEVzenZoTzFvMTVaMEJidXlDZG5MWW1JZERfNzNoTzZHTnp3P3J0aW1lPWZ3TkZBX0hlMkVn&id=%2Fpersonal%2Finfo%5Finnosportlabsportenbeweeg%5Fnl%2FDocuments%2FMedewerkers%20InnoSportLab%2FUSPC%20%2D%20general%2F3%2E%20BMX%2FSMC%20Sensor%2Fpython) |
| Proof of concept data visualizers | [SMC-final-zonderlogo](https://innosportslab-my.sharepoint.com/personal/info_innosportlabsportenbeweeg_nl/_layouts/15/onedrive.aspx?originalPath=aHR0cHM6Ly9pbm5vc3BvcnRzbGFiLW15LnNoYXJlcG9pbnQuY29tLzpmOi9nL3BlcnNvbmFsL2luZm9faW5ub3Nwb3J0bGFic3BvcnRlbmJld2VlZ19ubC9Fb1JsWk9OSGVlbEVzenZoTzFvMTVaMEJidXlDZG5MWW1JZERfNzNoTzZHTnp3P3J0aW1lPWZ3TkZBX0hlMkVn&id=%2Fpersonal%2Finfo%5Finnosportlabsportenbeweeg%5Fnl%2FDocuments%2FMedewerkers%20InnoSportLab%2FUSPC%20%2D%20general%2F3%2E%20BMX%2FSMC%20Sensor%2FSMC%5Ffinal%5Fzonderlogo) & [Smc-sensor-programma](https://innosportslab-my.sharepoint.com/personal/info_innosportlabsportenbeweeg_nl/_layouts/15/onedrive.aspx?originalPath=aHR0cHM6Ly9pbm5vc3BvcnRzbGFiLW15LnNoYXJlcG9pbnQuY29tLzpmOi9nL3BlcnNvbmFsL2luZm9faW5ub3Nwb3J0bGFic3BvcnRlbmJld2VlZ19ubC9Fb1JsWk9OSGVlbEVzenZoTzFvMTVaMEJidXlDZG5MWW1JZERfNzNoTzZHTnp3P3J0aW1lPWZ3TkZBX0hlMkVn&id=%2Fpersonal%2Finfo%5Finnosportlabsportenbeweeg%5Fnl%2FDocuments%2FMedewerkers%20InnoSportLab%2FUSPC%20%2D%20general%2F3%2E%20BMX%2FSMC%20Sensor%2FSmc%5Fsensor%5Fprogramma) |
| SMC\_arno | [SMC-arno](https://innosportslab-my.sharepoint.com/personal/info_innosportlabsportenbeweeg_nl/_layouts/15/onedrive.aspx?originalPath=aHR0cHM6Ly9pbm5vc3BvcnRzbGFiLW15LnNoYXJlcG9pbnQuY29tLzpmOi9nL3BlcnNvbmFsL2luZm9faW5ub3Nwb3J0bGFic3BvcnRlbmJld2VlZ19ubC9Fb1JsWk9OSGVlbEVzenZoTzFvMTVaMEJidXlDZG5MWW1JZERfNzNoTzZHTnp3P3J0aW1lPWZ3TkZBX0hlMkVn&id=%2Fpersonal%2Finfo%5Finnosportlabsportenbeweeg%5Fnl%2FDocuments%2FMedewerkers%20InnoSportLab%2FUSPC%20%2D%20general%2F3%2E%20BMX%2FSMC%5Farno) |
| Unity data logger and visualizer | [SMC-V1.0](https://innosportslab-my.sharepoint.com/personal/info_innosportlabsportenbeweeg_nl/_layouts/15/onedrive.aspx?originalPath=aHR0cHM6Ly9pbm5vc3BvcnRzbGFiLW15LnNoYXJlcG9pbnQuY29tLzpmOi9nL3BlcnNvbmFsL2luZm9faW5ub3Nwb3J0bGFic3BvcnRlbmJld2VlZ19ubC9Fb1JsWk9OSGVlbEVzenZoTzFvMTVaMEJidXlDZG5MWW1JZERfNzNoTzZHTnp3P3J0aW1lPWZ3TkZBX0hlMkVn&id=%2Fpersonal%2Finfo%5Finnosportlabsportenbeweeg%5Fnl%2FDocuments%2FMedewerkers%20InnoSportLab%2FUSPC%20%2D%20general%2F3%2E%20BMX%2FSMC%5FV1%2E0) |

The following chapters will describe these programs on a per-program basis.

## Proof of concept website

This is a website where riders can login with their account and have an overview of their profile and qualities. It is only a proof of concept so it’s not 100% a finished product. It looks like it could be very useful to keep track of riders and their progress but our area of expertise is not web development and therefore we cannot accurately verify this project.

## Mqtt local logger

This project writes sensor data to a local file. It connects to a pre-programmed address and writes all data directly to a CSV file. It should be noted that this program is functionally equivalent to the following project:

## Mqtt sensor logger

This project consists of 2 python files. The “filter.py” file writes sensor data to a file and the “logger.py” prints this data on screen. The code is incomplete. There is also an explanation document where the code isn’t explained. In conclusion, this code is unusable for us.

## Proof of concept data visualizers

This project includes 2 slightly different versions of the same project. The only difference between these versions is that one contains a logo, while the other version does not. As such, these 2 projects shall both be considered in this chapter.

The main goal of this proof of concept is to capture and display data from either a remote or local device. While the code works, it is not exactly reusable. The parts of the code that handle drawing the UI and handling interaction contain hard-coded positions of which button is where, instead of using (f.e.) a more object-oriented approach (where each button keeps track of its position and size, and provides (f.e.) a callback to the main UI in case it is clicked.

We want to improve this code by basically starting over but make a more object-oriented environment where it is much easier to expand the code if necessary. It is also just a better quality code and future programmers will be able to understand the code easier.

## SMC\_arno

This project does not contain a program (nor source code), but does contain two videos where measurement data is displayed on screen with the ability to track the user. It is not clear how these videos were generated, but it appears to be automatically generated. Because there is no code available, this project shall not be considered for re-use.

## Unity data logger and visualizer

This project contains two main features: reading Tag data from MQTT, and reading tag data from CSV log files. This data gets visualized in the 3d environment in Unity,

Currently reading MQTT data is only partially implemented (It can only connect to tags, but not get any data from them)

Reading CSV files is fully implemented.

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# Conclusion

In conclusion, we are not going to reuse much of the existing software. We are however going to continue working on the Proof of concept data visualizers but we are going to almost remake it and try to make it object oriented and SOLID. This makes it much more scalable and extensible for future groups and easier to understand in general. In this program we will implement parts of other prototypes but we won’t be able to copy any code from those projects as they are not finished or poorly implemented.

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