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|  | RAAST – MicroTransAt S1 2022  Rotterdam University of Applied Sciences – CMI – TI  Contact Client: w.m.bergmann.tiest@hr.nl  Contact Student: 0949461@hr.nl |  |  |
| Project status Report | | | | |
| Project Summary | | | | |
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| Report Date | Project Name | Prepared By |
| 16-05-2022 | MicroTransAt – RAAST | B. Wildeman |

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| Project Description |
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The initial assumption based on the project title and description made by the project group was as following:  
1. There are several (working) sensor modules based on the Arduino Framework and Arduino microcontroller family

2. The task at hand is to investigate the existing modules, and to port/translate them into the end product’s intended microcontroller. This Being the MSP430 and/or compatible languages/frameworks.

3. The end product will consist out of several modular “sensorboards” and a main processing module. The design will be largely based on the software/hardware architecture described in the “software\_hardware\_design.pdf” (attached at end of document + available on github) Although this is subject to change as time goes along.

4. The to be designed product must adhere to several requirements. Some of which are to be strictly followed, whereas others are to be seen as “guidelines” or “wishes”. These requirements can be found at the end of this document as attachment, and on the github under the filename “product\_backlog.pdf”. In here you will find the concept backlog as discussed with the client, as well as the “user story” format which will be used and expanded upon as the product is developed

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| Project Status part 1 |
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After investigating the previously described (already functioning) modules for their functionality and/or completeness. Several points were to be noted. Primarily there is no previously existing (working) Arduino code for most modules. Some modules were never prototyped at all and have only been conceptualized in writing.

Therefore, these modules are to be added to the backlog and are to be newly designed and coded by the project group. These modules are to be prioritized based on what is required for every deadline. Being a multidisciplinary project, other project group’s progress depends on the functionality of one, if not several of the modules within this project.

The short summarized progress already completed can be found in the table below.

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| Project Status part 2 |
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| task | Done | Due date | notes |
| **A 9-DOF sensor module is to be made, so that the software can detect the heading, and tilt/roll of the boat** | **Yes, on Arduino Framework** | **24-03-2022** | **The next step for this task is to fully port it from Arduino to native MSP430 code (C++)** |
| **A CAN-Bus is to be realized as the backbone of the boat. All communication between separate modules will occur via this CAN-Bus** | **Partly,**  **CAN-Bus Communication has been achieved on the Arduino microcontroller** | **24-03-2022** | **This deadline was purely functional, therefore the Arduino microcontroller was used as the MSP430 is not functional with the CAN-controller as of 16-05-2022**  **Moreover in issuelog** |
| **The CAN-Bus message structure is to follow the NMEA-2000 Protocol (closed source)** | **No, however the list of NMEA-2000 conform message structures has been made. CAN-Bus messages will have to be constructed using the structures found in the document “NMEA2000\_PGNS.pdf”** | **End Of 2022 S1** |  |

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| Risk and issue history |
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| issue | DATE | SOlved? |
| **9-DOF sensor does not work accurately all the time.** | **24-03-2022** | **YES, not relevant enough to develop further** |
| **CAN-Bus transceiver only works on Arduino, MSP430 does not appear to be compatible.** | **24-03-2022** | **NO, needs further investigation. MSP430 native** |
| **Arduino Framework is too memory intensive. Taking up roughly 96% of memory with just the code required for the 9-DOF module.** | **12-04-2022** | **NO, MSP430 will have to be programmed with it’s native coding. This means all previous code written for Arduino needs to be ported** |
| **Project Group Disbanded, group now consists of only one member.** | **09-05-2022** | **Not Applicable, Restructuring within project has been discussed with client. Client wishes to continue with project together with the remaining team member where possible.** |