

FMH606 Master's Thesis

Title: Digitalization the Healthcare Industry by Implementing Robotic Process Automation and Machine Learning Solutions

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External partner: STFH

Task background:

Robotic Process Automation (RPA) is a software robot that performs the tasks of one human through interaction with the user interface to one or more IT systems or computer programs. See and Figure 1 and Figure 2.

Today, health workers spend a lot of time solving rule-based and manual tasks, often across multiple systems. See Figure 3.

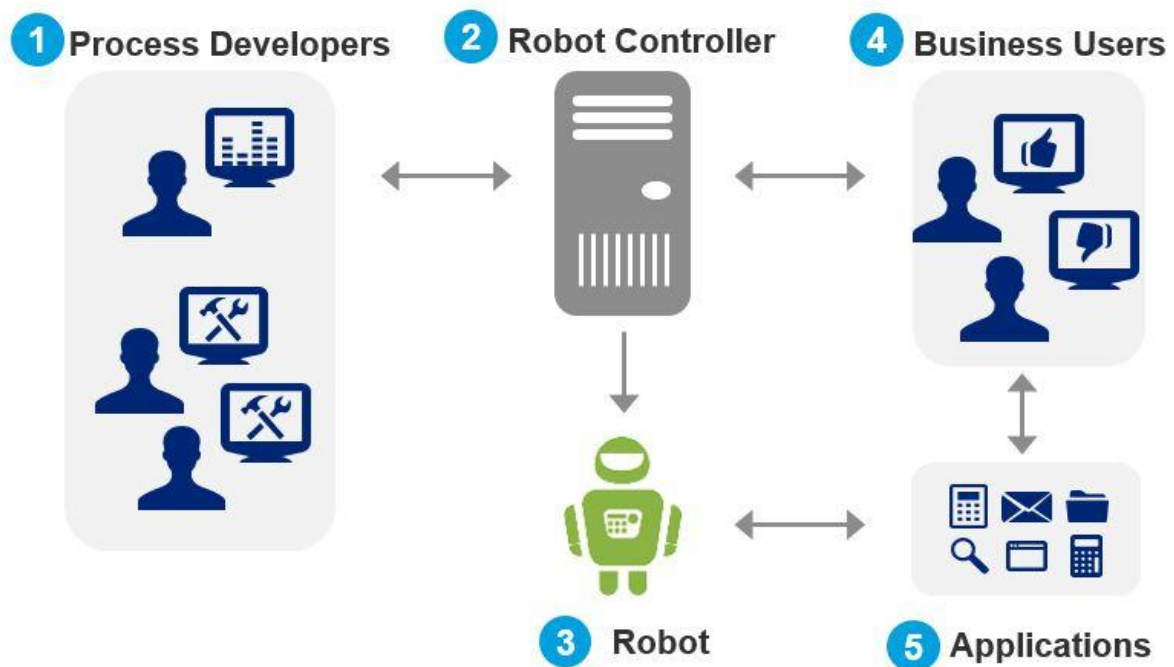


Figure 1: Steps involved in Robotic Process Automation (RPA)

[https://www.reddit.com/r/rpa_automation/comments/9fq4uk/how_does_rpa_work/]

To extend the practical utility of RPA we can combine it with Machine Learning (ML).

Task description:

In this project we will develop Robotic Process Automation (RPA) systems and increase the digitalization of the health industry in Norway in combination with Machine Learning (ML).

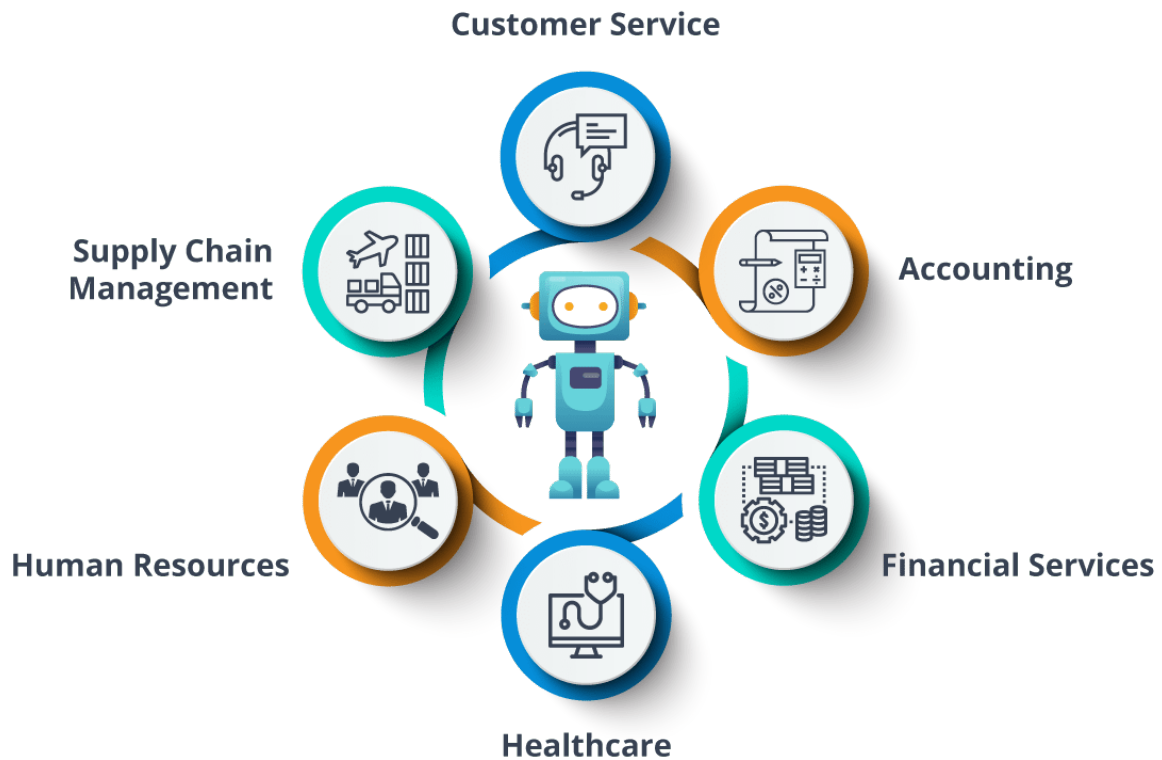


Figure 2: Robotic Process Automation (RPA) in Healthcare and other Areas
[<https://www.edureka.co/blog/what-is-robotic-process-automation/>]

Suggested Project Activities

The following activities are relevant in this project (which tasks that shall be part of this student project will be decided by the student in collaboration with the supervisors and external partners when the project starts):

- Make an overview of Robotic Process Automation RPA in general and evaluate it in a wider context like in the process industry and in health care.
- Make an overview of possible RPA applications and possibilities within Health Care Solutions. Robotic Process Automation (RPA) doesn't suit every process. You need to identify where we should use RPA at STFH. You should also see RPA applications in context of GDPR. The task should result in two answers:
 - Recommend a product based on various criteria such as price, functionality, availability, developer community and product support.
 - A priority list of tasks an RPA should either perform (replace manual job) or only support a manual job.
- Make an overview of tools that can be used for RPA applications. One such specialized tool is UiPath. Use of Python for RPA applications should also be considered. Software like UiPath is a commercial product, so open source alternatives should be considered.
- Evaluate how Machine Learning (ML) can extend the use of RPA applications
- Implement and test RPA on a practical case. You can use one of the cases found in the overview or use one of the following:

- Support for the reception, assessment and further processing of electronic episodes
- Increase the quality of medical coding of patient diagnoses and procedures through findings in individual patient's records and empirical data
- For example, put bid diagnosis based on a main diagnosis
- For example, find incorrect codes and automatically correct or provide support for manual correction in journal

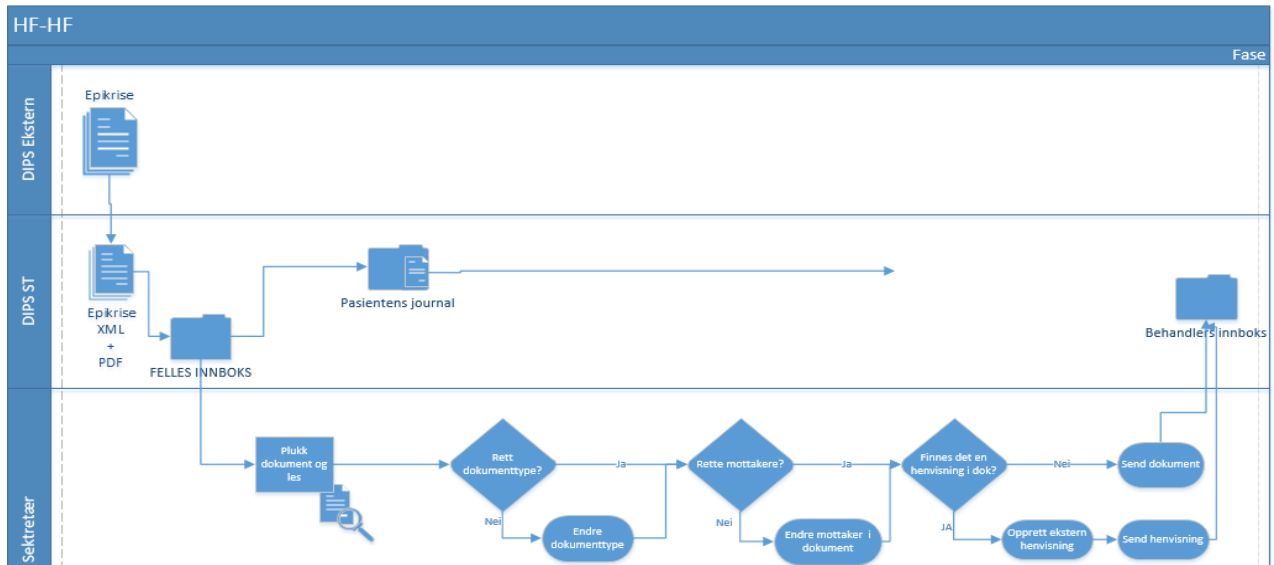


Figure 3: Typical Example of Document Flow at STFH

References:

- UiPath - <https://www.uipath.com>
- Robotteknologi (RPA) - Evry - <https://www.evry.com/no/bransjer-og-tjenester/key-services/kognitiv-teknologi-automatisering/robotteknologi-rpa/>

Student category: IIA (suitable for Campus, Online or Industry Master students)

Practical arrangements:

All necessary software, equipment and access will be available. The project can be done from anywhere. Some meetings with external partner should be expected, but most meetings can be taken online using, e.g., Skype.

Supervision:

As a general rule, the student is entitled to 15-20 hours of supervision. This includes necessary time for the supervisor to prepare for supervision meetings (reading material to be discussed, etc).

Signatures:

Supervisor (date and signature):

Student (write clearly in all capitalized letters):

Student (date and signature):