Thomas Research Approach

**Main question:**

What are the most common vulnerabilities of IOT devices and how can the security of IOT devices be improved?

**Sub question**:

* What is IOT?
* What are IOT devices?
* What are common IOT devices?
* What are the most common flaws of IOT devices?
* How can these flaws be prevented and patched?
* What protocols do IOT devices use for communication?

**Approach**:

*What is IOT?*

To find out what IOT is there is a library study needed. To be specific, [Available Product Analysis](http://ictresearchmethods.nl/Available_product_analysis) is going to be done, to gather available information about IOT. [Community Research](http://ictresearchmethods.nl/Community_research) is useful to see if others have already tackled the problem and what is useful for us. Last but not least [Literature Study](http://ictresearchmethods.nl/Literature_study), to gather (new) information about IOT.

*What are IOT devices?*

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*What are common IOT devices?*

An option to find the most common IOT devices, can be done with field research. Think about a [Survey](http://ictresearchmethods.nl/Survey), to get to know what people think the most common devices are. Also [Literature Study](http://ictresearchmethods.nl/Literature_study) to find the most common ones. So field and library study will be done for this subquestion.

*What are the most common flaws of IOT devices?*

The most common flaws can be found by library study. So [Literature Study](http://ictresearchmethods.nl/Literature_study) can be done to find the most common flaws. Why invent the wheel again? Incorporating what others have learned is an important practice([Best good and bad pratices](http://ictresearchmethods.nl/Best_good_and_bad_practices)). Also with finding the most common flaws which people already found/learned. But also lab methods will be helpful like [System Test](http://ictresearchmethods.nl/System_test) and [Security Test](http://ictresearchmethods.nl/Security_test). Those help to find and test the most common flaws in the IOT. So for this question library and lab methods will be used.

*How can these flaws be prevented and patched?*

To know how to patch flaws there needs to be a library study in the form of [Literature Study](http://ictresearchmethods.nl/Literature_study). With this method, information can be found of the prevention of common flaws. Lab research will be done, think about [A/B Testing](http://ictresearchmethods.nl/A/B_testing) and a [Security Test](http://ictresearchmethods.nl/Security_test). This needs to be done for testing the prevention. Also an showroom method: [Product Review](http://ictresearchmethods.nl/Product_review) is useful to check if the product is ready for delivering. An [Ethical Check](http://ictresearchmethods.nl/Ethical_check) will be needed to check if the new product doesn't break the norms and values.

*What protocols do IOT devices use for communication?*

To find out what protocols IOT devices use there is library, workshop and lab research needed. So [Available Product Analysis](http://ictresearchmethods.nl/Available_product_analysis) can be done to find out what other people learned about the communication and protocols of IOT devices. Workshop research can be done in the form of a [Code Review](http://ictresearchmethods.nl/Code_review). This helps to find any form of communication in the code of IOT devices. A [Component Test](http://ictresearchmethods.nl/Component_test) is useful to see how the communication works in real life. You can intercept the data to see what happens.