*Purpose of document: Projekt description for Linnaeus University Version 2019-09-17*

**LoRaWAN Gateway – Integration of hardware to thethingsnetwork.org**

For: LineSpotting AB

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Hardware:

* 4x IMST [IC880A-SPI](https://www.thethingsnetwork.org/forum/t/rak831-vs-ic880a-spi/12423)   
  <https://shop.coredump.ch/product/ic880a-lorawan-gateway-backplane/>
* 4x C880A LoRaWAN Gateway Backplane v2.1
* 4x Raspberry Pi 4 Model B with 4GB RAM (2019 Model)
* 3x [Base antenna collinear 868 Mhz 869 mhz LORAWAN LORA 5Dbd Vinnant](https://rover.ebay.com/rover/0/e11401.m1842.l5919/7?euid=acf3ace233fe41b9a79ff4b4fb7cc038&bu=43167290437&loc=https%3A%2F%2Fwww.ebay.com%2Fulk%2Fvod%3Fitemid%3D303281205590%26transid%3D1669640279020%26qu%3D3&sojTags=bu=bu)
* 1x <https://www.ebay.co.uk/itm/Antenna-5-8-super-coverage-868-mhz-869Mhz-lorawan-smart-grid-Europe/293195949908?>
* [Low loss cable 1m long H155 BELDEN N male to SMA male lorawan ADS-B lowloss](https://rover.ebay.com/rover/0/e11401.m1842.l5919/7?euid=c03e0aed99ca438082313f9a93fc1783&bu=43167290437&loc=https%3A%2F%2Fwww.ebay.com%2Fulk%2Fvod%3Fitemid%3D303250384235%26transid%3D1669640280020%26qu%3D2&sojTags=bu=bu)
* GPS:  
  <https://www.aliexpress.com/item/32992067876.html?spm=a2g0s.9042311.0.0.78d14c4dKBevsO>
* 4x USB Chargers TYPE A/B
* 4x USB Memory sticks
* 4x USB to micro USB cords
* 4x USB to USB C cords (not in kit yet)
* RJ45 connection to internet

STM32 LoRa video, Getting started:

<https://www.youtube.com/watch?v=MgbTraRq0K8>

**Final product:**

1. Code for the Lora card to work as a Lorawan Gateway
   1. Presented as Open source code
2. If necessary: Code for Raspberry Pi 4 to work as a Lorawan Gateway
   1. Presented as Open source code
3. Complete description of how to install the LoRaWAN gateway on the hardware and connect it to thethingsnetwork.org in Microsoft word format
   1. Complete copy of all software and code needed on a USB
4. **4x working LoRaWAN Gateways on thethingsnetwork.org**

*\*The developer/integrator/s is free to use any open source code (thethingsnetwork.org), similar projects or external consultants as fiverr to complete the task. (university may have harder restrictions)*

*All sources of input and consultants should be presented in links or contact details with a description of what was used.*

**Meetings and timeline for project**

1. **Workshop with Linespotting:**
   1. Go through project and hardware and possible quick solutions.
   2. Any extra hardware is needed?
   3. Communication channel is established through email & whatsapp/slack
2. **Development Progress:**
   1. Student reports once a week
3. **Project Test:**
   1. Small workshop where LS AB and the student/s tests the hardware
4. **Project Approval:**
   1. Linespotting accepts the delivery
5. **Project Delivery:**
   1. LS AB hands over a written recommendation to the student
   2. LS AB hands over a report to the university
6. **Installation and Maintenance:**
   1. Linespotting AB sets up the LoRaWAN gateways on Öland (2x) and in Kalmar (2x)

The project Should be completed within 6 weeks from start and all code and documentation should be handed over at that time for compensation.

Linespotting AB will compensate the student/s with hardware for the project, what hardware is agreed between the student and LS AB.

David Radszuweit  
CEO, LineSpotting AB  
2019-09-17

Short Summary:

**Small Project for integrating hardware to a LoRaWAN Gateway and 3D printing a box**

Using a modular concept with a proven workflow from thethingsnetwork.org

<https://www.trell.se/blog/building-lorawan-gateway/>

<https://www.youtube.com/watch?v=ZFVA6cQyheY>

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