LASAGNA [evaluation]

Low power Autonomous System for Adaptive Generalised Naval Assistance

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Network

- Should be low power to last a long time
- Containers stacked on top and next to each other, electromagnetical interference
- If it is necessary, we will consider to add a sensor

Preliminary estimates

- BLE beacon covers 100mt range
- Doing some calculations the area of the circle drawn by the beacon is about 31k m^2
- A container 12mt x 2,5mt covers about 30 m^2
- Dividing the above areas we get around 1000 containers cover
- Then we can easily suppose that a stack of some containers
- The beacon transmits every minute
- Max 300 byte can be trasmitted
- We need 100 byte max

- Receiver deployed on lightpoles

Power Consumption

Power consumption is the most critical on our BLE beacons so we thought about some power saving techniques:

- CPU sleeps between timer interrupts
- Power off BLE when not in use
- Integrate motion sensor to limit pings when container is stationary

In general, we need further information on how containers move within the port and their expected stay duration.

Response time

Not critical

- Power system does not require any particular user interaction
- Excessive delays will be avoided
- Latency will be measured and evaluated

Long term impact

Saved cost analysis - more optimized routing means:

- Less time spent on each shipment, both in terms of operator time and overall shipment duration
- Lower fuel usage
- Lower port area usage