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ESCOLA SUPERIOR D'ENGINYERIA INDUSTRIAL, AEROESPACIAL I
AUDIOVISUAL DE TERRASSA
ENGINEERING IN AEROSPACE TECHNOLOGIES

Evaluation of the Lightning Imaging Sensor aboard the International Space Station using Lightning Mapping Array

BACHELOR THESIS
– BUDGET & ENVIRONMENT –

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Price of workforce

An approximated salary cost for the development of the project can be seen in the table 1. The estimated total cost for the production of the study is 3600€, computed from the distribution of 300h of work with a salary of 12€/h. The time distribution shown in table 1 is approximate but representative of the weight that each area of work has had on the project.

		Duration of task [h]	Cost of Workforce [€/h]	Total Cost [€]
Project Charter		15	12	180
A	Extract Lightning Documentation	21	12	252
	Extract LIS Documentation	33	12	396
	Extract LMA Documentation	15	12	180
B	Extract HDF format documentation	6	12	72
	Program LIS data reader	50	12	600
	Write User guide for data reader	3	12	36
C	Write and clarify LMA vs LIS analysis	9	12	108
	Program LIS vs LMA comparator	50	12	600
	Write User guide for comparator	3	12	36
	Comparison results analysis	55	12	660
Electric arc radiance research		25	12	300
Other writing and redaction work		15	12	180
TOTAL		300		3600

Table 1: Approximate budget for the conception of the project. Phase A is "General Documentation", phase B is "Reading ISS-LIS data", phase C is "LMA vs LIS analysis".

Price of means of production & environmental impact

The estimation of the cost for maintaining the infrastructure required for the developement of the project can be seen below.

The estimated energy consumption of a complete desktop¹ is 600 kWh/year at 8h per day [1]. Thus, 300h of work require 61.64 kWh. The price of electricity in Barcelona (2019) is 0.1255 €/kWh (Endesa) [2]. As the project has been done in approx. 6 months an estimation of electricity cost has been 7.73€. The amount of CO2 produced in that time is 17.98 kg. [1]

The main cost required for the the tools required for this project is the MATLAB year licence, which sums 800€. Thus, the cost of the means of production is approximately 807.73€.

Hence, the sum of the salaries and the means of production gives a total cost of:

THE TOTAL COST OF THE PROJECT IS ~4410€ AND IT GENERATED ~20 KG OF CO2.

References

- [1] Editor. *How much power does a computer use? And how much does CO2 does it represent?* Retrieved from: <https://www.energuide.be/en/questions-answers/how-much-power-does-a-computer-use-and-how-much-co2-does-that-represent/54/>. June 2019.
- [2] Editor. *Precio del kWh en 2019*. Retrieved from: <https://tarifasgasluz.com/faq/precio-kwh>. June 2019.

¹PC, router, printer and other peripherals included.