System Engineering Approach to Extending Endurance of Cooperative Gliders

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***Abstract*— The paper describes the multidisciplinary approach to the development of extended endurance of multiple cooperative gliders capable to harvest solar and thermals energy. Starting with a brief review of the components required to enable the extended endurance flight, the paper concentrates on the need for evolution of previously built architecture that already enabled successful utilization of the energy of sun. The discussion justifies the essential components of the single solar-powered thermaling glider and illustrates the key benefits of multiple platforms collaboration.**

I. INTRODUCTION

Who is working in the area? What fundamental results were developed and demonstrated in flight? Why the evolution of the previously built architecture is necessary? What are the key building components?

II. SYSTEM LEVEL ARCHITECTURE

A diagram of the proposed architecture goes here. Discussion of why the components are necessary should be provided.

A. Electric Energy Management Subsystem

Kevin describes the architecture here: diagram, hardware components, wiring e.t.c. Choice of solar cells. Choice of batteries. Experimental setups to verify the energy density claims. Discussion of the experimental results. It's impact on the future control strategies to sustain overnight flight

B. Potential Energy Management

Control stuff goes here

III. HIL AND SIL SETUP

Condor and Condor API

IV. PRELIMINARY FLIGHT TEST RESULTS

System identification =¿ sink polar=¿ ID of a thermal=¿ Thermaling guidance=¿ Thermal mapping=¿ Navigation for the purpose of mission goals.

V. FUTURE STEPS

Our plans for the November-February time frame.

VI. CONCLUSIONS

A conclusion might elaborate on the importance of the work or suggest applications and extensions.

APPENDIX

Appendixes should appear before the acknowledgment.

ACKNOWLEDGMENT

The preferred spelling of the word acknowledgment in America is without an e after the g. Avoid the stilted expression, One of us (R. B. G.) thanks . . . Instead, try R. B. G. thanks. Put sponsor acknowledgments in the unnumbered footnote on the first page.

References are important to the reader; therefore, each citation must be complete and correct. If at all possible, references should be commonly available publications.

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