The Florida Senate
Local Funding Initiative Request
Fiscal Year 2020-2021

LFIR # 2333

1. **Project Title** IMEC USA Unmanned Aerial Vehicle (UAV) NIR Python Detection Camera

2. **Senate Sponsor** Victor Torres

3. **Date of Request** 11/12/2019

4. **Project/Program Description**

The purpose of this project is threefold. 1) To leverage internal research and development (IRAD) efforts by IMEC USA, ERS, and UCF's development of a vehicle-mounted near, near infrared (NIR) python detection camera and integrate an equivalent camera on to an unmanned aerial vehicle (UAV sometime called a drone). To gain reasonable field experience with the UAV and camera such that probability of python detection and false alarms can be quantified (top down view) as well as determining how effective these camera(s) are at reducing the overall population of pythons in the Everglades given sufficient number of UAVs and cameras. 3) Reducing the cost of these camera systems to less than 15K$ such that they can be affordable for python hunters.

5. **State Agency to receive requested funds** Senate

State Agency contacted? ○ Yes ◉ No

6. **Amount of the Nonrecurring Request for Fiscal Year 2020-2021**

Type of Funding	Amount
Operations	500,000
Fixed Capital Outlay	000
Total State Funds Requested	500,000

7. **Total Project Cost for Fiscal Year 2020-2021 (including matching funds available for this project)**

Type of Funding	Amount	Percentage
Total State Funds Requested (from question #6)	500000	91.0 %
Matching Funds		
Federal	36,000	7 %
State (excluding the amount of this request)	10,000	2 %
Local	00	0 %
Other	00	0 %
Total Project Costs for Fiscal Year 2020-2021	546,000	100 %

8. **Has this project previously received state funding?** ○ Yes ◉ No

If yes, provide the most recent instance:

Fiscal Year (yyyy-yy)	Amount		Specific Appropriation #	Vetoed
	Recurring	Nonrecurring		

9. **Is future-year funding likely to be requested?** ○ Yes ◉ No

If yes, indicate nonrecurring amount per year.

10. **Details on how the requested state funds will be expended**

Spending Category	Description	Amount
Administrative Costs:		
Executive Director/Project Head Salary and Benefits		
Other Salary and Benefits		
Expense/Equipment/ Travel/Supplies/Other		
Consultants/Contracted Services/Study		
Operational Costs: Other		
Salary and Benefits	IMEC USA will design the camera hardware, software, integrate both on the drone, and will test the system in the laboratory and in the field. The camera design includes the integation of filters, Illumination design and testing, as well as software development and integration to operate while the drone is flying and operating in the python search process. IMEC USA will hire Dr. Ron Driggers from the University of Central Florida to assist in the camera design, integration, and testing (both lab	450,000
Expense/Equipment/ Travel/Supplies/Other	These funds will be used to purchase a high performance, but low cost drone(s), the camera parts needed for integration, software tools, and laboratory testing equipment. Some of these funds will be used for travel to the Everglades for field testing of the system.	50,000
Consultants/Contracted Services/Study		
Fixed Capital Construction/Major Renovation:		
Construction/Renovation/ Land/Planning Engineering		
Total State Funds Requested (must equal total from question #6)		500,000

11. **Program Performance**

a. What specific purpose or goal will be achieved by the funds requested?

Specific Goals are 1) To leverage internal research and development (IRAD) efforts by IMEC USA, ERS, and UCF's development of a vehicle-mounted near, near infrared (NIR) python detection camera and integrate an equivalent camera on to an unmanned aerial vehicle (UAV sometime called a drone). To gain reasonable field experience with the UAV and camera such that probability of python detection and false alarms can be quantified (top down view) as well as determining how effective these camera(s) are at reducing the overall population of pythons in the Everglades given sufficient number of UAVs and cameras. 3) Reducing the cost of these camera systems to less than 15K$ such that they can be affordable for python hunters.

b. What activities and services will be provided to meet the intended purpose of these funds?

A near infrared camera designed, fabricated, and integrated onto an Unmanned Aerial Vehicle for the purpose of finding (detecting and locating) invasive Burmese pythons. This camera will be provided to Florida-licensed snake hunters to significantly increase the number of pythons captured. The Florida Everglades is infested with Burmese Pythons caused by the release of exotic pets in the 1980s. The current estimates are between 30,000 to 300,000 pythons, where the result is a severe decline in Everglade mammals: 90 percent reductions in raccoon, opossum, bobcats, and foxes and it is anticipated the pythons will be migrating north.

c. What direct services will be provided to citizens by the appropriation project?

Services to citizens will be manifested by providing a direct capability to Florida-licensed python hunters that will increase the number of pythons captured. This service is anticipated to significantly reduce the number of pythons in south Florida, saving many other natural species (e.g., small mammals) and also reducing the risk of significant numbers of pythons migrating further north in Florida, thus reducing potential safety risks to Florida residents.

d. Who is the target population served by this project? How many individuals are expected to be served?

The benefactors of this project are (in order of impact) are: 1) Florida residents who live in or near close proximity to the Everglades National Park, 2) Those Florida businesses who support the national park tourist industry related to ENP, 3) Florida residents who visit the ENP, 4) Florida residents who are north of the ENP where the significant expansion of pythons are migrating, 5) at some near future, all Florida residents who are below the Florida freezing point latitude.

e. What is the expected benefit or outcome of this project? What is the methodology by which this outcome will be measured?

At the end of the project, we have included development of a metric that quantifies probability of python detection and false alarm rates. This metric and the evaluation of the python detection camera will allow us to provide predictions to the total number of pythons that can be detected and captured using this camera technology. At project conclusion, we will provide an estimate of total number of pythons that can/will be captured provided a given number of UAV camera systems.

f. What are the suggested penalties that the contracting agency may consider in addition to its standard penalties for failing to meet deliverables or performance measures provided for in the contract?

While this effort is a capability developmental effort, if IMEC USA (of Osceola County) does not provide a UAV-borne NIR camera that increases the number of pythons, then the State of Florida should consider banning IMEC USA from participating in legislative requests for 2-3 years.

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12. **The owners of the facility to receive, directly or indirectly, any fixed capital outlay funding. Include the relationship between the owners of the facility and the entity.**

Not applicable

13. **Requestor Contact Information**

a. First Name: Mike Last Name: Nichola

b. Organization: Osceola County

c. E-mail Address: Mike.Nichola@osceola.org

d. Phone Number: (407)742-2393 Ext.

14. **Recipient Contact Information**

a. Organization: IMEC USA

b. Municipality and County: Osceola

c. Organization Type

- ○ For-profit Entity
- ◉ Non-Profit 501(c) (3)
- ○ Non-Profit 501(c) (4)
- ○ Local Entity
- ○ University or College
- ○ Other (please specify)

d. First Name: Orges Last Name: Furxhi

e. E-mail Address: Orges.Furxhi@imec-int.com

f. Phone Number: (901)3372704

15. **Lobbyist Contact Information**

a. Name: Mark Delegal

b. Firm Name: Holland & Knight LLP

c. E-mail Address: mark.delegal@hklaw.com

d. Phone Number: (850)4255685 Ext.