

# PISCES NEWSLETTER SPECIAL EDITION

Pacific International Space Center for Exploration Systems \* Hilo, Hawai'i

NOVEMBER, 2013

VOL #1 ISSUE #4



*Polly Roth, PISCES Executive Administrator*

*Polly Roth joined PISCES as the Office Manager, Executive Assistant and jack-of-all-administrative-trades in March, 2013.*

*Her Bachelor's Degree is in Nutritional Science, but she found her way into the world of nonprofit administration over thirty years ago and never turned back.*

*Polly's first nonprofit experience was working as a grant writer for the Domestic Abuse Project where she was asked to step in to cover accounting duties on very short notice. She became so interested in the administrative side of the business that she went back to university, taking accounting and business courses at night for three years.*

*The lion's share of her nonprofit career has been on Hawaii Island in the astronomy sector. She began at Mauna Kea Support Services in 1988, and went on to work as the Senior Accountant at Keck Observatory during construction of Keck I, the first ten-meter telescope in the world.*

*Polly joined Gemini Observatory in 1997, where she was the Controller until 2007 when she became the Associate Director of Administration.*

*Gemini Observatory operates twin eight-meter telescopes, one on Mauna Kea in Hawaii and the other on Cerro Pachon in Chile. Polly directed the accounting, procurement, human resources, facilities, fleet, general administration and information systems functions in both hemispheres until mid-2011.*

## MESSAGE FROM THE EXECUTIVE DIRECTOR

Dear PISCES friends and ohana,

As the new Executive Director, I have been writing many columns for the PISCES Newsletter over the last year talking about the changes occurring in the Center and the need for that change. I would like to take a break from that and talk about the larger aerospace picture in the State of Hawaii – hence this, special, extended edition of our newsletter.

October was a fascinating month! While the federal government was struggling with a shutdown, the State of Hawaii came together in the State Capitol in early October for the 2013 Hawaii Aerospace Summit. This event brought together legislators, military, academia, state research agencies, economic development and industry from both the islands and the mainland to discuss the emergence of AEROSPACE as an important economic driver within the State of Hawaii. The focus and goal was to map out a strategic vision and prioritization within the State's aerospace industry for the coming years and determine how best to proceed in the coming 2014 State legislative session.

We are all familiar with the budget-constrained environment in which we currently operate, within both the federal and state sectors. This necessitates all within the aerospace industry to prioritize - to determine the highest research and best "bang for the buck". (cont. on page 3)



**ROB KELSO, PISCES EXECUTIVE DIRECTOR**

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# HENK ROGERS ELECTED AS NEW BOARD CHAIR

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## PISCES STAFF

ROB KELSO, Executive Director

POLLY ROTH, Executive Administrator

CHRISTIAN ANDERSEN, Operations Manager

JOHN HAMILTON, Test Logistics/EPO Manager

MARI-ELA DAVID CHOCK, Public Information Officer

## BOARD OF DIRECTORS

HENK B. ROGERS, Chair

LEWIS L. PEACH, Jr., Secretary

THE HONORABLE GEORGE R. ARIYOSHI

HOYT DAVIDSON

MARY ALICE EVANS representing RICHARD LIM

GALEN HO

JIM KERAVALA

DR. DONALD O. STRANEY representing DR. DAVID LASSNER

ROBERT M. KELSO, Ex-Officio Voting

DR. DANIEL J. RASKY, Ex-Officio Non-Voting

## CULTURAL ADVISORY COMMITTEE

KALEPA BAYBAYAN

NATHAN CHANG

GREG CHUN

KAMAKA GUNDERSON

ROBERT K. LINDSEY, JR.

KIMO PIHANA

KOA RICE

DR. DAVID SING

FRANK TRUSDELL

## ROGERS TAKES OVER AFTER FORMER GOVERNOR GEORGE ARIYOSHI STEPS DOWN

Entrepreneur and philanthropist, Henk Rogers, is now serving as Chair of the Pacific International Space Center for Exploration Systems (PISCES) Board of Directors after The Honorable Governor George Ariyoshi stepped down from the position.

Rogers is the founder and CEO of Blue Planet Foundation, a non-profit organization in Honolulu dedicated to increasing the use of clean renewable energy in Hawaii. He is also the founder of the Tetris Company, which licenses the video game.

Rogers was vice-chair of the PISCES Board before he was nominated by Gov. Ariyoshi and elected by the board on October 7<sup>th</sup> to serve as Chair.

In November of 2012, the Board of Directors was established for PISCES through the legislative bill, Act 169, with Governor Ariyoshi appointed as Chair.

Governor Ariyoshi will still continue to serve as a member of the Board.



*(Left) The Honorable Governor George Ariyoshi (Right) Henk Rogers*

# 2013 HAWAII AEROSPACE SUMMIT

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## SUMMIT SUMMARY

### BY HENK ROGERS

Mankind is at a crossroads in space exploration. It is the end of an era where hugely expensive government sponsored manned expeditions to LEO (Low Earth Orbit) and unmanned expeditions beyond are the only way to space. The new competing paradigm is lean and mean space exploration sponsored by business, academia and small non-profit space enthusiast organizations. It is our goal to bring the coming multi-billion dollar business of this new kind of space exploration and settlement to Hawaii.



*PISCES Board Chair Henk Rogers moderating a panel at the Hawaii Aerospace Summit next to Peter Crouch, UH College of Engineering Dean, & Jacquie Hoover, HIEDB Executive Director*

### Hawaii will be #1 in space tourism.

Hawaii is the only place where horizontal launch is both close to great tourist infrastructure and open ocean unpopulated area necessary for launch safety reasons. We have access to potential high net worth space tourists from both the mainland and from Asia.  
*(cont. on page 4)*



### MESSAGE FROM THE EXECUTIVE DIRECTOR

#### (CONT'D FROM PAGE 3)

Increasingly, we are told to integrate that thinking into the budget realities. One very positive “up-side” of facing increased budgetary pressures is that it forces people to get really innovative! When there is competition and/or budgetary pressures, people in industry, academia and government are drawn together to find ways to do smaller, more focused, more affordable areas of collaboration. We saw this happening in wonderful splendor during the recent 2013 Hawaii Aerospace Summit.

The new Chairman of the Board of Directors, Mr. Henk Rogers, recently consolidated the discussions for the Summit as a beginning of a vision for Hawaii-based Space Exploration. ***His report is outlined on the left hand side of this page.***

As such, this recent 2013 Hawaii Summit on Aerospace is a crucial step in establishing a forward plan for aerospace within our State.

I look forward to a Hawaii which will steadily raise the standards of aerospace accomplishment and which will steadily enlarge scientific and economic opportunities for all of our citizens. And I look forward to a Hawaii which commands respect throughout the Pacific Rim not only for its “palm trees & paradise” but for its aerospace endeavors as well.

**I think Hawaii should be that leader.** A state as blessed as this which bears so many burdens and responsibilities, which has so many opportunities, should be second to none. And while I do not regard our mastery of aerospace as anywhere near complete, while I recognize that there are still areas where we are behind in this State—we will be formulating a vision for aerospace that will help shape our state and economy. And I am for it.

We have a long way to go. Many weeks and months and years of long, tedious work lie ahead. There will be setbacks and frustrations and disappointments. There will be, as there always are, pressures within this state to do less in this area as in so many others, and temptations to do something else that is perhaps easier. But this sector of aerospace here in Hawaii must go forward. This aerospace effort must go on.  
*(cont. on page 4)*

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## MESSAGE FROM THE EXECUTIVE DIRECTOR

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### SUMMIT SUMMARY BY HENK ROGERS

(CONT'D FROM PAGE 3)

Hawaii will be #1 in micro satellite manufacturing and launch. Hawaii's location, thousands of miles from the nearest populated area in every direction, means that we can launch satellites into every orbit at the lowest cost. Moreover, the University of Hawaii is taking the lead in both building and launching micro satellites.

Hawaii will be #1 in off-planet settlement and its technologies. Hawaii's volcanic mountain-top geology being the same basaltic composition as the Moon and Mars makes it the perfect place to practice building and living in extra-terrestrial settlements before we actually go. Since we are unique in this area, we should welcome every agency that has plans for such settlements to test their concepts in Hawaii."



In the last 8-10 years, the aerospace industry has been transformed. It no longer is just the possession of major space-faring nations like the U.S. and the former Soviet Union ...but, now we see the emergence of new industries and new companies from the private sector in space and aerospace in areas of space transportation, space tourism, suborbital spaceflight, commercially-provided launch boosters, companies establishing positions for space resource utilization and more. The advancement of aerospace must and will go ahead with or without the federal government, and with or without our own state government. That much we know. That much we can say with confidence and conviction.

This State, thru its recent legislation action, has tossed its hat into the ring of aerospace, and we have no choice but to follow it. Whatever the difficulties, they will be overcome. Whatever the hazards, they must be guarded against. With the vital help of the aerospace industries, with the help of all those who labor in the aerospace endeavor, with the help of academia, and support of all Hawaiians, we will climb this mountain with safety and with speed-and we shall then explore the wonders on the other side.



PISCES Executive Director Rob Kelso moderating a panel at the Hawaii Aerospace Summit



# CHILDREN'S DAY AT THE CAPITOL

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## AEROSPACE FUN WITH HAWAII'S KEIKI

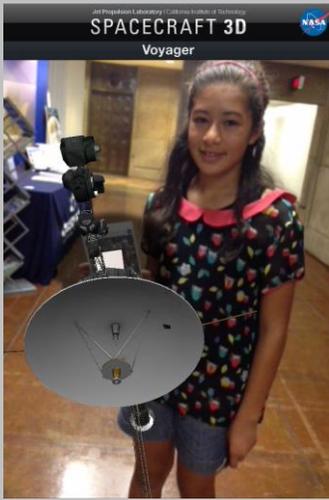
PISCES joined other aerospace companies in turning the bottom floor of the state capitol into a space wonderland for all the kids and kids at heart who attended the Hawaii Children & Youth Day.

The event was held on Sunday, October 6<sup>th</sup> – just a few days before the Hawaii Aerospace Summit.

PISCES gave children a chance to take a picture with a 3D NASA spacecraft of their choice.

The spotlight, however, went to Hawaii's 3D printing expert, Russ Ogi. He helped PISCES with our exhibit by showcasing his *incredible* 3D printed collection. It included a Robocop helmet, which was a major hit with the kids!

PISCES happens to have a Memorandum of Understanding (MOU) with Russ, and we're thrilled to have him tag team with us on a fun event like this, as well as honored to be able to partner with him on some of PISCES's aerospace projects. Mahalo Russ!



(L-R) PISCES Test Logistics/EPO Manager John Hamilton, 3D Printing Expert Russ Ogi & PISCES Executive Director Rob Kelso



Russ Ogi's 3D printed creations featured at Children & Youth Day

# PISCES SIGNS TWO MORE MEMORANDA OF UNDERSTANDING

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As part of PISCES's exhibit at the Hawaii Aerospace Summit, holographer Jeff Allen and artist/sculptor Eileen Borgeson of AstronautWings.com debuted for the first time the 3D printed sculpture, "Freedom of Flight". This stunning piece was designed by Eileen, and was created/produced with the help of Jeff and 3D printing expert, Russ Ogi. The sculpture is intended to be used for creating monumental space architecture as well as fine art recognition pieces - a space version of the Oscar awards. Mahalo Eileen, Jeff, and Russ for sharing your talent and helping PISCES showcase the magic that can be created using 3D printing technology!



**FREEDOM OF FLIGHT STATUE**

Top: Conceptual drawing  
Bottom: 3D printed model

## HONEYBEE ROBOTICS AND MADE IN SPACE PARTNER WITH PISCES

PISCES is excited to announce that it has expanded its list of Memoranda of Understanding (MOU's) to eleven, after officially partnering with Honeybee Robotics and Made In Space.

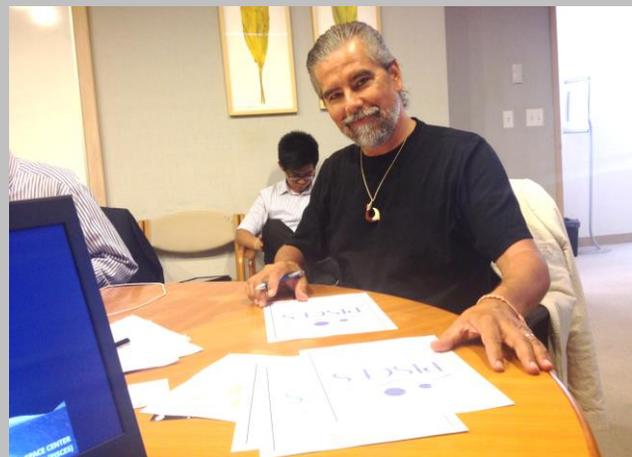
The signing took place at the PISCES Board of Director's meeting on October 7<sup>th</sup> in Honolulu - the day before the Hawaii Aerospace Summit.

Honeybee Robotics is based in New York and specializes in advanced robotic and spacecraft systems. The company has worked on over 100 projects with NASA, and is widely known for developing the first machine ever to gain access to the interior of rocks on another planet.

This machine is called the Rock Abrasion Tool, or RAT, and was used on both of NASA's Mars Exploration Rovers, named 'Spirit' and 'Opportunity'.

Made In Space is based in Northern California and specializes in additive manufacturing, or 3D printing. The company's goal is to develop the world's very first 3D printer that can be launched and used in space. A prototype is now undergoing the flight certification process.

PISCES will partner with Honeybee Robotics and Made In Space on the Center's 3D laser printing projects.



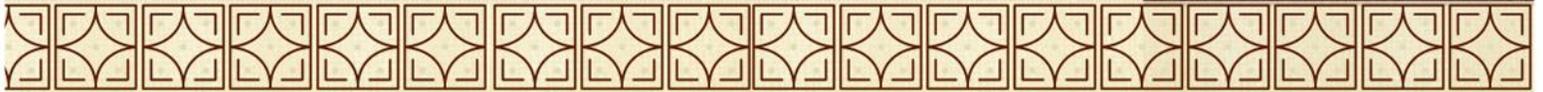
PISCES New Board Chair Henk Rogers signing the two newest MOU's

# PISCES'S NEW HOME FLOOR PLAN RELEASED

*In fiscal year 2013, the State awarded \$2.34 million to PISCES under House Bill 2873. Of that, \$1.84 million was allocated for capital improvement (CIP) and \$0.5 million went toward operations. Of the \$1.84 million for CIP, \$275K was allocated for the Department of Accounting and General Services (DAGS) for the planning and site survey study required to locate the best place for a new PISCES facility. The DAGS study is due in December. The remaining \$1.565 million in CIP will be used to construct the new PISCES building.*

Ferraro Choi & Associates, the award-winning architectural firm in Hawaii that has been contracted to design PISCES's new home, has released a conceptual plan showing the layout of our future facilities.

The proposed floor plan includes a (1) **Test & Checkout** area featuring a machine shop, chemistry lab, and instrumentation lab, an (2) **Administration & Operations** area for offices, meeting space for PISCES and visiting staff plus operational control space and a (3) **Regolith (space dirt) Arena** where technologies designed to manipulate regolith (i.e. extracting oxygen or water out of moon dirt) can be tested prior to field testing. Under this plan, the property would be 2.5 acres. A location for the building has yet to be determined (see sidebar on the right) and this floor plan would still need to undergo a rigorous review and approval process. Still, we are excited to share this blueprint as it marks much progress in the design of our future *hale* (home)! Scroll down to see the layout of the first and second floor.



## PISCES DIAGRAMMATIC CONCEPT PLANS BY FERRARO CHOI & ASSOCIATES

### 1<sup>ST</sup> FLOOR



### 2<sup>ND</sup> FLOOR

