



The UPR Aguadilla-AAIPR complex

The aerospace and defense sectors are amongst the most important industry components in today's global economy. Advances in commercial aviation and in aerospace technology serve as the basis to many of the advances and characteristics of a nascent global and diverse society. By making a better use of mature technologies in innovative and different ways, developing new paradigms to current problems, or exploring cutting-edge processes, technologies, and products aerospace companies will need to devote even further resources for innovation in the future. The Northwest Metropolitan area of Puerto Rico, which includes the Aguadilla, Aguada, Isabela, Rincon, San Sebastian and Moca municipalities, has been for the last ten years the local host for aerospace businesses dedicated to research and development activities such as Honeywell, Infotech and Infosys among others. These businesses along with the Lufthansa Technik maintenance repair and overhaul operations are growing an ecosystem that provides specialized human resources, products and services to guarantee their global competitiveness. As it is now the aeronautical and aerospace cluster in Puerto Rico is generating 1,400 direct jobs with an expansion forecast of 3,000 for the next two years and 4,000 indirect job creations.

This expansion is encouraged by installations such as the Rafael Hernandez International Airport host to the biggest runway in the Caribbean, institutions such as the UPR Aguadilla-AAIPR complex with a specialized academic ecosystem and industry players such as: Lufthansa Technik, Lockheed Martin, Infosys Inc., Pratt & Whitney, Honeywell Aerospace, Florida Turbines, Phoenix Cables Inc., Axon Puerto Rico, Infotech Aerospace Services and Essig Research.

The Aeronautical and Aerospace Institute of Puerto Rico (AAIPR) is a non-profit subsidiary corporation of the University of Puerto Rico (UPR) ascribed to the UPR Aguadilla campus forming, what is called in this document, the UPR Aguadilla-AAIPR complex. The AAIPR with its academic counterpart, the UPR Aguadilla, is the main driver to organize and implement the knowledge base ecosystem that promotes the growth and expansion of the aeronautical, and aerospace industry cluster requires.

The UPR Aguadilla-AAIPR complex facilities are located inside the former Ramey Air Force Base in the Aguadilla municipality. The selection for this location was made based on the Ramey Area current physical infrastructure and development potential and it's fit with the AAIPR current target business areas and near future expansion plans. The Ramey Base facilities infrastructure was built in year 1943 to comply with United States of America military standards. Due to its military use the runway at Ramey had to be built to a length of 11,702 ft and a width of 200 ft, it has an added 870 ft Blast Pad at each end and a 50 ft shoulder on each side making it the biggest in the island and the Caribbean. This runway makes the airport fit to receive big and heavy military and commercial type aircraft.

Today Ramey's runway facilities can provide a platform for satellite launching and unmanned aerial and space vehicle research. Its other building infrastructure provide an ideal place to establish research and development operations that are sensitive to vibrations and require intense weather resistant conditions such as hurricane type winds and earthquake type events. Due to



their location at 283 feet above sea level, the facilities are also immune to tsunami type events which also make the facilities suitable to host research activities using high performance computing equipment that sustain major scale simulations and Big Data operations and initiatives.

AAIPR current facilities are unique in the island, the Caribbean and one of the top three in the world. The facilities comprise 27,000 sq ft. and are composed of a main building, a Hangar and a parking lot with 90 spaces. The main building is divided into different areas: the administrative offices, the regular student area which contains seven (7) classrooms, two (2) computer centers dedicated for student use and a library and the corporate training area which contains a business center, an advanced training and simulation room and a dedicated computer center.

The Hangar is home to all the laboratories and workshops specialized in the aeronautical and aerospace industry. It contains a unique and specialized Structures laboratory designed according to Lufthansa Technik specifications, a Painting workshop, a Welding workshop, the Power plants laboratory, a Radar and Communications laboratory, a Basic Electricity and Avionics laboratory and a Composites workshop. It will also host a physics aerodynamics laboratory unique in the island. As part of the partnership with Honeywell Aerospace, the Hangar will also include a unique specialized laboratory for embedded systems, unmanned aerial vehicles and satellite technology programing and configuration. The Hangar laboratories and workshop composition was designed to provide academic, certification and other program participants with skills and knowledge in:

- Current Aeronautics Technologies (Structures, Powerplants, Welding and Painting)
- Future Aeronautics and Aerospace Technologies (Composites, Avionics, Embbeded Systems, Unmanned Aerial and Space Vehicles).
- Physics and Applied Aerodynamics.

These combined skills and knowledge can be obtained only in the UPR Aguadilla-AAIPR complex. The UPR Aguadilla-AAIPR complex can host up to three thousand (3000) students in the AAIPR facilities within 7:00am until 10:00pm, which is the normal operation schedule. UPR Aguadilla facilities currently have three thousand and four hundred (3,400) registered students.

Additionally to its location advantage, multiple strengths at the academic, business and government levels define the UPR Aguadilla-AAIPR complex capabilities to provide its collaborators and business partners with a competitive edge to do business in the Americas.

The UPR Aguadilla side implements the academic programs level of the UPR Aguadilla-AAIPR complex. It has the Associate Degree in Aeronautics and Aerospace Technology and has under development for starting on August 2017 a minor on Aerospace Business Management part of the Business Administration Bachelor Degree. All these programs and are unique in the UPR system, the island and in the Caribbean. The Natural Sciences Department is providing the research component on Material Sciences that support AAIPR research, development and commercialization initiative in joint venture with the Molecular Sciences Research Center. As



part of the University of Puerto Rico, the UPR Aguadilla-AAIPR complex have access to specialized faculty members and researchers; thematic courses across all the disciplines and Multiple recognized and accredited programs and certifications.

The UPR Aguadilla-AAIPR complex will continue expanding its current offerings exploring new markets and new ways to implement the integration of business and academia. Current opportunities identified are:

- Creation of new academic programs or enhancement of current ones to ensure a pool of skilled workforce and entrepreneurs.
- Provide certifications and academic programs to students from Latin America and Asia.
- Provide specialized aerospace industry related training to individuals and groups with an engineering background to strengthen Puerto Rico capability in this area.
- Build strategic research capabilities related to the aeronautical and aerospace industry to provide services and commercialize intellectual property.

The AAIPR side implements the private sector and government agencies co-creation partnerships. The AAIPR business philosophy is based on a co-creation development model. In this model, industry, academia and government create and nurture the growth of solutions together to benefit the socioeconomic environment of the island. This benefit generates value and opportunities in the short, medium and long term for all components of the various initiatives. The aim of the AAIPR is to develop long-term relationships based on trust and transparency by means of dedicated personal and organizational assistance, value co-creation and the growth of special interest communities. The set of these relationships make the AAIPR products and services highly customized to exceed customer expectations.

At the government and business level, the AAIPR has as partners' and collaborators different government agencies such as the Puerto Rico Industrial development Company (PRIDCO), the Federal Aviation Administration (FAA), the Select USA Program of the United States Department of Commerce and the United States Department of Labor. In the private sector, the AAIPR has as co-creation partners Lufthansa Technik Puerto Rico and Honeywell Aerospace Solutions and is a member of the Aerospace Consortium, which includes Infosys, Infotech, Florida Turbines among other players in the aerospace industry in Puerto Rico.

The AAIPR initiatives structure is organized to foster creation, dissemination and application of knowledge at the service of the aerospace industry. The currently implemented initiative is the Aeronautical and Aerospace Center for Services and Training (AACST) and the new initiatives projected for year 2017 are the Aeronautical and Aerospace Institute of Multidisciplinary Technologies (AAIMT) and the Aeronautical and Aerospace Institute of Technology Design (AAITD) and the Aeronautical and Aerospace Institute of Creative Integration (AAICI).

The first and most important current initiative is the AAIMT. This division will focus in providing; research and development services, intellectual property development and a technology transfer and commercialization platform. The AAIMT will have five clusters for research and development that will be developed in phases according to market needs and



opportunities, customer requirements from the current and future aerospace industries and businesses established in Puerto Rico and fit with the Commonwealth of Puerto Rico socio economic development strategies. These five research clusters are Materials Science Technologies, Atmospheric Sciences, Navigational and Positional Technologies, Propulsion Technologies and Human Factors Research. These clusters were selected to leverage on current Puerto Rico research capabilities, the actual aeronautical and aerospace industrial ecosystem and to build capability to sustain available technologies and future industry developments such as Unmanned Aerial, Space Vehicles.

The Aeronautical and Aerospace Institute of Technology Design (AAITD) will provide the integration with the manufacturing branch of the economy. Using 3-D printing and other digital manufacturing capabilities, our natural strength in engineering design, our research and development capabilities and the access to global markets the Institute of Technology Design will provide services to businesses and individuals that require design of processes, materials, biological products and the capability to manufacture them.

The Aeronautical and Aerospace Institute of Creative Integration (AAICI) initiatives will implement the social and environmental responsibility component of the AAIPR. This Institute will provide access to the surrounding communities and municipalities to a state of the art Fab Lab facility, an Entrepreneurship and Incubator Academy and access to the application of developed technology to improve the energy and agricultural sustainability of their communities.

All these initiatives are unique to the island in its scope and operation. To sustain them the AAIPR is actively pursuing collaboration and/or cooperation agreements and partnerships with:

- Academic institutions/universities, global businesses and public and private organizations interested in developing aeronautical/aerospace human resources development initiatives and research and technology innovation and co-creation initiatives.

The collaborations, partnerships and academic programs of the UPR Aguadilla-AAIPR complex are aimed to develop a sustainable long-term socio economic development in Puerto Rico and to build a cooperation community among countries that are looking for sharing best practices in the integration of academia and business in the aeronautic and aerospace industry.