



A QUANTUM LEAP TO INNOVATION!

CUTTING-EDGE RF PRODUCTS | MOBILE TECHNOLOGY | ADVANCED COMMUNICATION & NAVIGATION SOLUTIONS



## MISSION

Quantum Dimension, Inc. delivers innovative technology solutions in Advanced Wireless, Navigation Systems, Embedded Applications and cutting-edge Radio Frequency (RF) Design for commercial and military benefit. We collaborate with government, educational and industry leaders to bring robust solutions to the marketplace.



Our objective is to design, develop, and integrate technology for Small Form Factor Software Defined Radio (SDR), Embedded, Internet of Things (IoT) Devices, Navigation and RF Systems. Our talented team of engineers combines an entrepreneurial spirit with solid industry expertise delivering high-quality innovative solutions to military and commercial customers.

## VALUE PROPOSITION

Our specialization in custom hardware and software design is a tremendous advantage for our customers: we're able to enhance the state-of-the-art at a significantly reduced cost and schedule. Whether it is providing technology for handheld wireless devices for soldiers in the Middle East, reducing power requirements for handheld devices, or providing interoperability of disparate wireless devices, we continuously provide innovative ways to extend today's RF communication and navigation technologies. We have built solid relationships with industry and government organizations allowing us to provide synergistic products and services to our partners and customers.

### SUPPORTING PRINCIPLES

- » Addressing quality of service challenges, for example in GPS-denied and jammed environments, while also developing advanced RF devices, for programs such as Mobile User Objective System (MUOS), provides end users with robust and innovative communication solutions.
- » Development of tight solution integration within existing products/systems allows end users access to next-generation enhancements at a significantly reduced cost and a reduced delivery schedule.

# CORE COMPETENCIES

## ADVANCED COMMUNICATION & NAVIGATION SOLUTIONS

Communication and navigation solutions increase in complexity as customers want more functionality, more efficient devices and faster time-to-market for products and product upgrades. In particular, the growth of cellular and GPS usage in both commercial and military applications has increased the need for more robust solutions which can meet the required level of service in the field. Quantum Dimension Inc. has extensive expertise in solving communication challenges that continually plague communication solutions. We continue to see growth and potential, and have developed technology, in these key areas:

- » High-Precision Positioning, Navigation and Timing (PNT) Solutions
- » GPS-Denied Navigation/Alternative Navigation
- » High-Performance SDR Technology
- » Multi-sensor Aircraft Landing System
- » GPS Enhanced Playback System

## EMBEDDED SYSTEMS

Embedded systems have become increasingly more popular due to increased processing power and functionality, while also providing reduced costs and complexity within the hardware and software development process. Additionally, this improves time to market for new solutions and for upgrades to existing communication components. Our custom embedded solutions assist our customers in reducing developing costs without sacrificing quality and/or functionality. Our embedded solutions include:

- » Small Form Factor Software Defined Radio
- » Hardware Solutions
  - » Digital Signal Processing (DSP) Based Solutions
  - » Graphics Processor Based (GPU) Solutions
  - » Field-Programmable Gate Array (FPGA) & Prototype Development
- » Low Power Wireless Collision Avoidance for Vehicles
  - » HawQ-i™ commercial solutions
- » High performance software libraries
- » Multi-waveform Support including 3G/4G Cellular
- » Signals of Opportunity (SoOP) based Navigation
- » Embedded C, and Linux Programming
- » IoT Hardware/Software development

## RF DEVICE DESIGN

We bring years of experience in high and medium power amplifier design, low noise amplifier design, frequency converters and system components ranging from the VHF to X band. Our engineers work with clients to conceptualize, simulate, and prototype the design prior to manufacture. Our expertise in RF design for applications ranging from Wi-Fi, LTE, WIMAX, GSM, and WCDMA to MUOS solutions.

- » MUOS RF Product Family-MUOS Specific Components
  - » High-Efficiency High Power Amplifier (HPA) for airborne, ground, and handheld applications
  - » Low Noise Amplifiers (LNA)
  - » Duplexers, Downlink and Uplink Filters, etc.
- » Quantum RF Family for SATCOM and Terrestrial RF
  - » Power Amplifiers
  - » LNA's, Mixers, and other RF products



# SERVICES AND APPLICATIONS

## SCOPE OF SERVICES

- » Hardware/Software Systems Architecture
- » RF System and Device Design
- » Hardware Design DSP, FPGA, IoT, etc.
- » Research & Development
- » Algorithm and Waveform Development
- » Device/System Modeling & Simulation
- » Systems Engineering
- » Feasibility Studies/Operations Concepts

## APPLICATIONS

- » Next generation military mobile handsets
- » Low power devices & components for mobile requirements
- » Communication waveforms for SDR
- » GPS & non-GPS navigation solutions
- » HawQ-i™ Low Power Collision Avoidance
- » Low Cost Prototype development
- » Robotic applications and more....

# REPRESENTATIVE PROJECTS

Some of our innovative products and services:

## GPS SOLUTIONS

- » GPS User Equipment Add-On Solutions
- » Non-GPS Navigation SoOP mobile device and system
- » GPS Enhanced Playback System
- » Communication link for GPS and satellite handheld devices
- » Custom algorithm development for time & frequency tracking for satellite calibration system
- » Innovative HawQ-i™ Product for Vehicles (Market launch 2016) utilizing low power wireless network technology
- » Embedded solution for atmospheric corrections for improving GPS/GNSS accuracy

## RF DESIGNS

- » Next-gen system development of WCDMA power amplifier
- » Development of Class E high power amplifier
- » RF handset systems, baseband systems design and radio architectures including Iridium satellite handset
- » Transmit bandpass filters for MUOS
- » Very low noise amplifier design
- » Narrowband RF amplifier design
- » Wideband low noise amplifier design
- » Tower mount amplifiers for GSM/CDMA
- » IoT hardware layout and device design

# CUSTOMERS AND PARTNERS

Our specialization in hardware design and development of custom devices and systems assists our customers in IR&D projects or for current program and project support. Whether it is providing enhancements to handheld wireless devices to US soldiers around the World, reducing power requirements for hand-held devices, or providing interoperability of disparate wireless devices for a manufacturing floor application, we continuously look at innovative ways to extend today's communications technologies.

## CUSTOMERS

**Government customers include:** Air Force Research Lab (AFRL), Air Force Space & Missile Command (SMC), Army PEO-C3T, NAVAIR, NAVY SPAWAR SYSTEMS CENTER (SSC-PAC) and Navy SSP.

## INDUSTRY CUSTOMERS/PARTNERS

These include: The Boeing Company, General Dynamics Mission Systems (GD-MS), General Dynamics Information Technology (GDIT), Ohio University, Rockwell Collins, SAIC, and UrsaNav.







# COMPANY PROFILE

Quantum Dimension, Inc. headquartered in Huntington Beach, CA was founded in 2006 by Dr. Michael Enright.

## MANAGEMENT

**Dr. Michael Enright** is Quantum Dimension's CEO/ President and Chief Scientist. He has over 20 years' experience in the design and development of communication technologies for AT&T, Hughes Space & Communications, Motorola, Signal and Image Processing Institute (SIPI) and the Integrated Media Systems Center (IMSC) at University of Southern California (USC) and The Boeing Company prior to co-founding Quantum Dimension. He is the Principal Investigator on Quantum Dimension's R&D contracts. He has worked commercially on projects including Spaceway (development of a space-based phased-array antenna subsystem at Hughes Space and Communication; on handset design for the Iridium satellite system; and on DSP software for telephone switching systems at AT&T Bell Laboratories. Throughout his career he has gained extensive experience in the design and development of both hardware and software systems across the spectrum of communication systems present in today's commercial and military environments.

His engineering experience at large prime manufacturers: AT&T, Hughes, Boeing, and Motorola have given him a strong foundation in product development, manufacturing, product testing, supply chain and marketing of new products to potential customers. This product development expertise has been invaluable as Quantum Dimension continues to develop innovative technology devices and systems.

**Ms. Julie A. Isenberger** serves as VP of Business Development and has over 20 year's business experience in sales and marketing from small start-ups to billion dollar corporations. At Quantum Dimension, Ms. Isenberger is responsible for development of strategic business partners within the government and commercial sectors; developing marketing strategy and materials; negotiating and executing contracts; and project manager for next-generation communications projects. The majority of Ms. Isenberger's business to business (B2B) experience has been in software infrastructure and application development solutions sales to Fortune 100 companies. During her career she has managed sales, support and technical teams; set up partnership programs to assist manufacturer's representatives in sales growth and strategies for deploying solutions at customer locations. She has developed vital partnerships which continue to support Quantum Dimension's technology development process.

## CORE ADVANTAGE

Our team's focus is delivering custom integrated solutions for both commercial and military applications particularly in leveraging those existing fielded solutions where our technology enhancements advance the state-of-the-art. This philosophy guides our development, marketing, and partnering strategies and is a key to our success in an extremely competitive engineering community.

## SUSTAINABLE COMPETITIVE ADVANTAGE

Our guiding principles provide significant benefit for our customers in particular our engineering team delivers:

- 1. Custom Solutions**— Our advanced solutions are critical to our customers who need tailored, specific expertise and custom high-quality solution delivery. We do not provide a "one-size fits all" generic approach. The end result is high-value delivery exactly where and when you need it.
- 2. Programmatic Focus**— Our team focuses on implementation of innovative technology within a system, not just a specific piece of hardware or software code. From system level to 30,000 foot view, we deliver solutions that compliment your entire program or system providing value to all stakeholders while reducing development and implementation issues and costs.
- 3. Cost Savings**— Our custom R&D provides organizations with results without the long-term drain on internal resources and capital. Our customers leverage our expertise by targeting specific programs or applications where our innovation/expertise can provide the best results. This provides better utilization of project or programmatic IR&D dollars and resources. Real Return on Investment for critical product development!



**18672 Florida St., Suite 302D, Huntington Beach, CA 92648**

**Corporate Site: [www.quantumdimension.com](http://www.quantumdimension.com)**

**HawQ-i™ Collision Avoidance [www.HawQ-i.com](http://www.HawQ-i.com)**

**RF Products: [www.quantum-rf.com](http://www.quantum-rf.com)**

**MUOS Specific Products: [www.muosrf.com](http://www.muosrf.com)**

**Phone: (714) 893-6004**

**Fax: (714) 893-6022**



# HawQ-i

SAVING LIVES!

**World's First Vehicle-Based Sensor Solution to Detect Bicyclists, Motorcyclists, and Pedestrians and Prevent Collisions and Deaths Utilizing Readily-Available RF Sensors!**

## BENEFITS

DETECTS PEDESTRIANS, BICYCLISTS & MOTORCYCLISTS & ALERTS DRIVER

IDEAL FOR LOW VISIBILITY OR HIGH TRAFFIC AREAS

WORKS GREAT AT HIGH SPEEDS



## FEATURES

LOW COST LIFESAVING TECHNOLOGY

LOW POWER RECHARGEABLE DEVICES

SENSES ANT+, BLE & PULSE SENSORS

EASY TO INSTALL AND USE



**HawQ-i Sense & Avoid is an innovative Internet of Things (IoT) solution that is able to provide alerts to drivers when a bicyclist, motorcyclists and/or pedestrian is within range of the receiver.**

### **HawQ-i Products: Sense, Pulse, & Beacon App**

- **Low Cost Road Safety Solution: addressing Bicyclists, Motorcyclists, & Pedestrians**
- **Perfect for Warehouse/Operations & Transportation applications**
- **Can Be Integrated with Other Sensors**



Quantum Dimension, Inc.  
18672 Florida St. Suite 302D  
Huntington Beach, CA 92648  
O: 714-893-6004 F: 714-893-6022  
E-mail: [julie@hawq-i.com](mailto:julie@hawq-i.com)  
[www.hawq-i.com](http://www.hawq-i.com)

# HawQ-i

SAVING LIVES!

Sensors that are detectable by **HawQ-i Sense** are **ANT+** and **Bluetooth Low Energy (BLE)** both found in today's fitness devices, trackers, and in Smartphones. You probably already own one of these products!

HAWQ-i SENSE



**HawQ-i Pulse** was designed for anyone who would like to be detected who does not currently have another **ANT+** or **BLE** device. Pulse is ideal for children, adults, and pets!

HAWQ-i PULSE



HawQ-i products utilize low-power technologies that work at the minimum without internet/cellular connections thus allowing life-saving operation in the absence of cellular service.



Quantum Dimension, Inc.  
18672 Florida St. Suite 302D  
Huntington Beach, CA 92648  
O: 714-893-6004 F: 714-893-6022  
E-mail: julie@hawq-i.com  
www.hawq-i.com