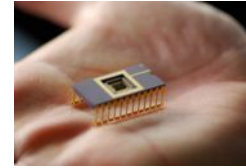


**widetroneix**  
semiconductors

***BETAVOLTAIC BATTERIES***  
***Long-Life Power for Defense & Medical Markets***

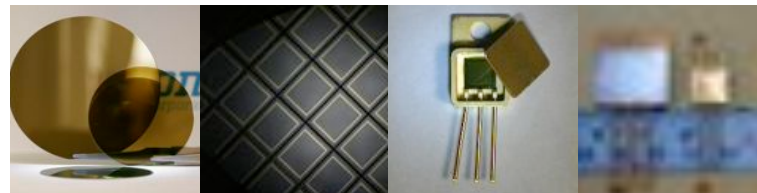
***NREL Industry Growth Forum***

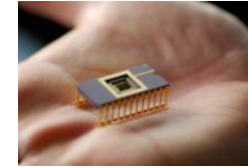
***Jonathan W. Greene, CEO***  
***November 2, 2009***



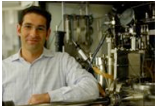
## SUMMARY

- **Patented Betavoltaics** – tiny, long life batteries targeting  $< 1 \text{ uW}$
- **Significant market potential**- defense (entry) and medical (growth)
- **Strong customer interest** – funding prototype development
- **Grants & VC Funding** – DoD contracts & DFJ seed round 10/08
- **First product sales in 2011** – DoD prime contractors
- **\$5M A-round 2010** – management, production facility, product launch





## MANAGEMENT TEAM



**Jon Greene**  
*CEO*

**MBA - 15 years management experience**

- Focus on government relations and customer partnerships for high tech start-ups
- Successfully raised >\$2M in government funding for Widetronix since 2007
- Managed \$750M project portfolio as director of development for Vail Resorts Inc.
- Former technology & regulatory consultant for EPA, DOE, and USAID



**Chris Thomas**  
*CTO*

**Ph.D. - 20 yrs semiconductor engineering**

- Expert in semiconductor materials, device engineering, and electronics packaging
- Former chief engineer Cornell Semiconductor production and R&D facility
- Managed multi-million dollar industry and defense R&D contracts
- Multiple patents & citations for power electronic and isotope powered batteries



**Ernest Davis**  
*COO*

**MS - 14 yrs management and engineering**

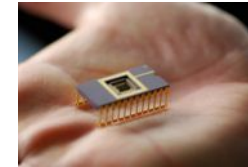
- Expert in patent/licensing strategy, product development, & production engineering
- Oversaw licensing deals at Cornell University resulting in \$80M in venture funding
- Product manager for \$200M Sun Microsystems interconnects business as IBM
- Former quality engineering, production, business operations, and leads for IBM



**Anthony Garcia**  
*Dir. Bus. Dev*

**MBA – 9 yrs defense industry**

- Expert in medical equipment and aerospace systems
- Decorated U.S. Army medical officer (captain) with two tours in Iraq
- Army leadership and operations coach for to 3000 officers
- Former supply chain management consultant to Sikorsky



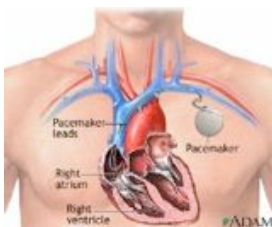
## POTENTIAL TARGET MARKETS



### Defense

- Anti-tamper circuits
- Autonomous Micro-controllers (sensors)
- Personnel status and equipment monitoring
- Ultra-low powered RFID
- Powered smart card – ID cards & ID tags
- Health Usage Management Systems (HUMS)
- Memory and RCT Backup Power

**\$500M**

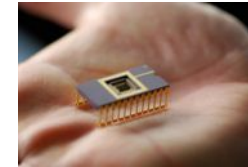


### Medical

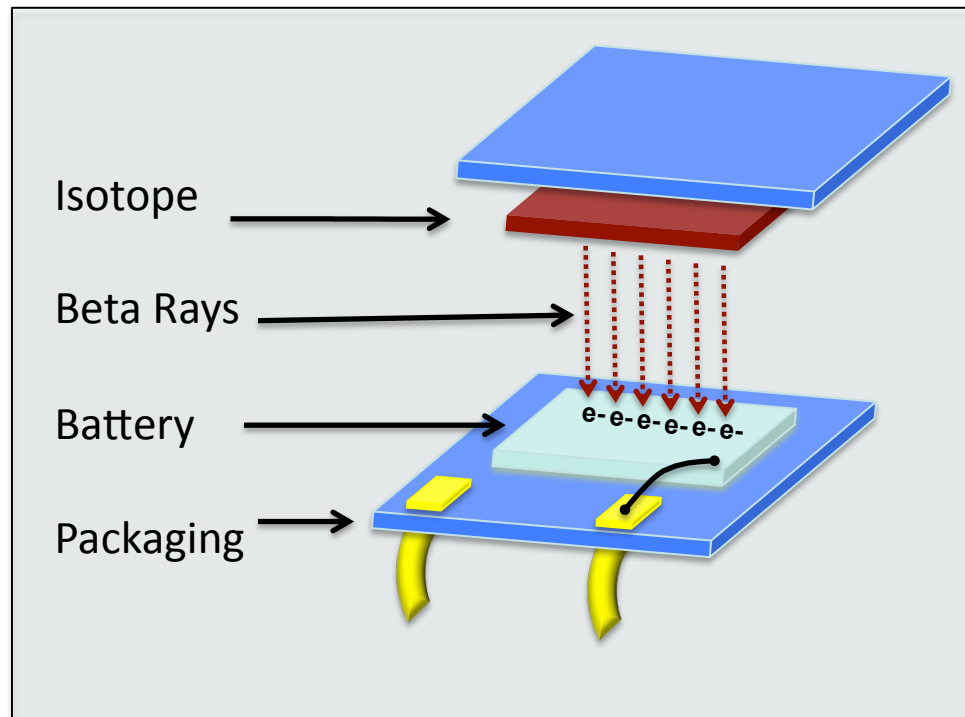
- MEMS Implants – lab-on-chip
- Neurologic implants – Parkinsons
- Cardiac implants – monitoring
- Telemedicine – out-patient monitoring
- Infusion pumps

**\$5B**

**Market drivers are long-life (+25 yrs) & small size**



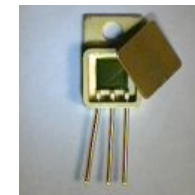
## BETAVOLTAIC TECHNOLOGY



1<sup>st</sup> Gen Chip



1<sup>st</sup> Gen Proto

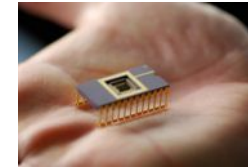


2<sup>nd</sup> Gen Chip

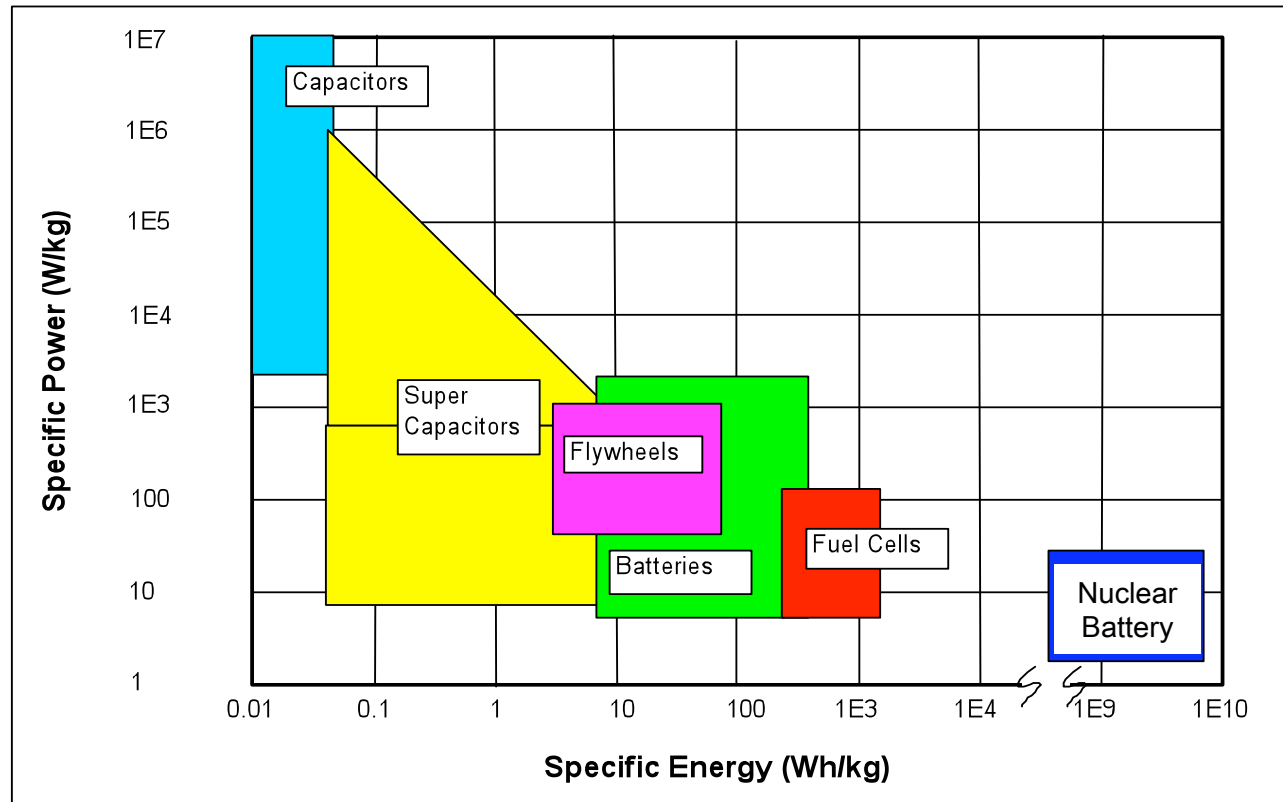


2<sup>nd</sup> & 3<sup>rd</sup> Gen Proto

***350 nA per @ 2V with Pm-147 on 6x6 mm chip***

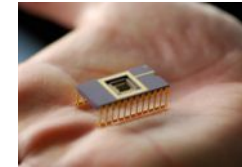


## COMPARISON OF POWER STORAGE


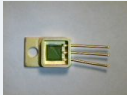

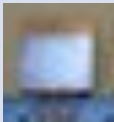



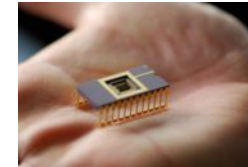
\*J. Blanchard, University of Wisconsin

**Market drivers are long-life (+25 yrs) & small size**



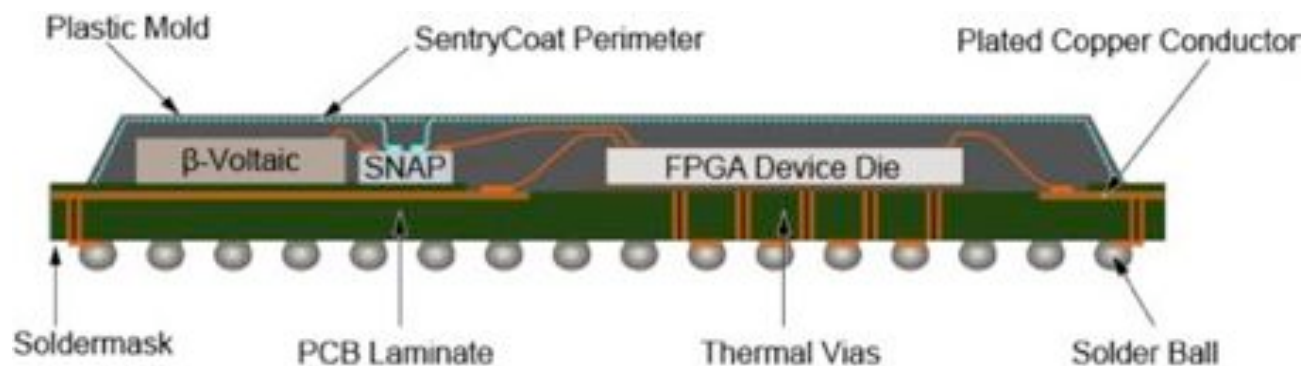
## PRODUCT ROLL-OUT

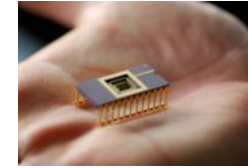
Product	Specification	Application	Status
<b>1<sup>ST</sup> GEN Prototype</b> 	0.5 nW	Customer Evaluation	Demo since 04/08 Lockheed testing since 05/08
<b>2<sup>ND</sup> GEN Prototype</b> 	11 nW	Customer Evaluation	Demo since 03/09 <b>Available to Customers</b>
<b>3<sup>RD</sup> GEN Prototype</b> 	17 nW	Customer Evaluation	Demo since 07/09 <b>Available to Customers</b>
<b>T25</b> 	25 nW	Anti-tamper Circuit	Demo since 03/09 Lockheed testing 11/09
<b>T1000</b> 	1 uW	Anti-Tamper & MEMS implant	<b>Demo 05/10</b>



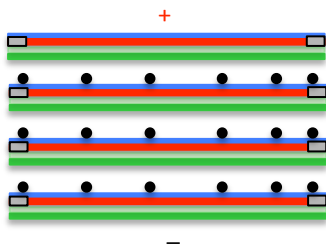
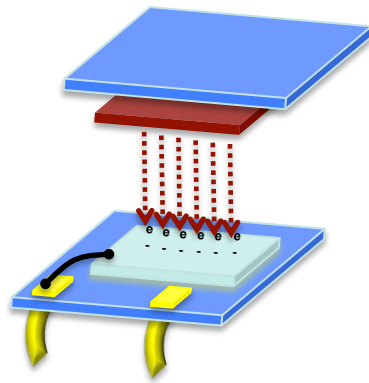
## AUTONOMOUS INTELLIGENCE

- Integrate betavoltaics with ultra low power micro-controllers
- Cornell's asynchronous micro-controller (SNAP/LE) (>1 uW)
- Vision is autonomous intelligence (25 years) with RF communication
- Prototype in partnership with Lockheed via DoD SBIR
- Wireless sensor markets are long-term target market





## PATENT STRATEGY



### ISOTOPE

- Increased surface activity (in process)
- Isotope production (in process)

### BATTERY

- SiC with minimized contacts (patented)
- Isotope optimized PN junctions (pending)

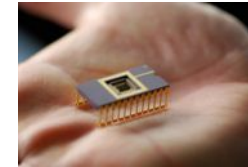
### BATTERY ISOTOPE INTERFACE

- Integrating isotope & battery (in process)

### PACKAGING

- Stacking to increase energy density (pending)
- Integration with IC's (in process)

***Building IP fence around all aspects of betavoltaics***



**THANK YOU**



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607.227.9194 – cell  
www.widetronix.com

