



potentia

**Potentia Inc
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**Idea to Product[®] Global
Competition
Austin, Texas
November 2, 2007**

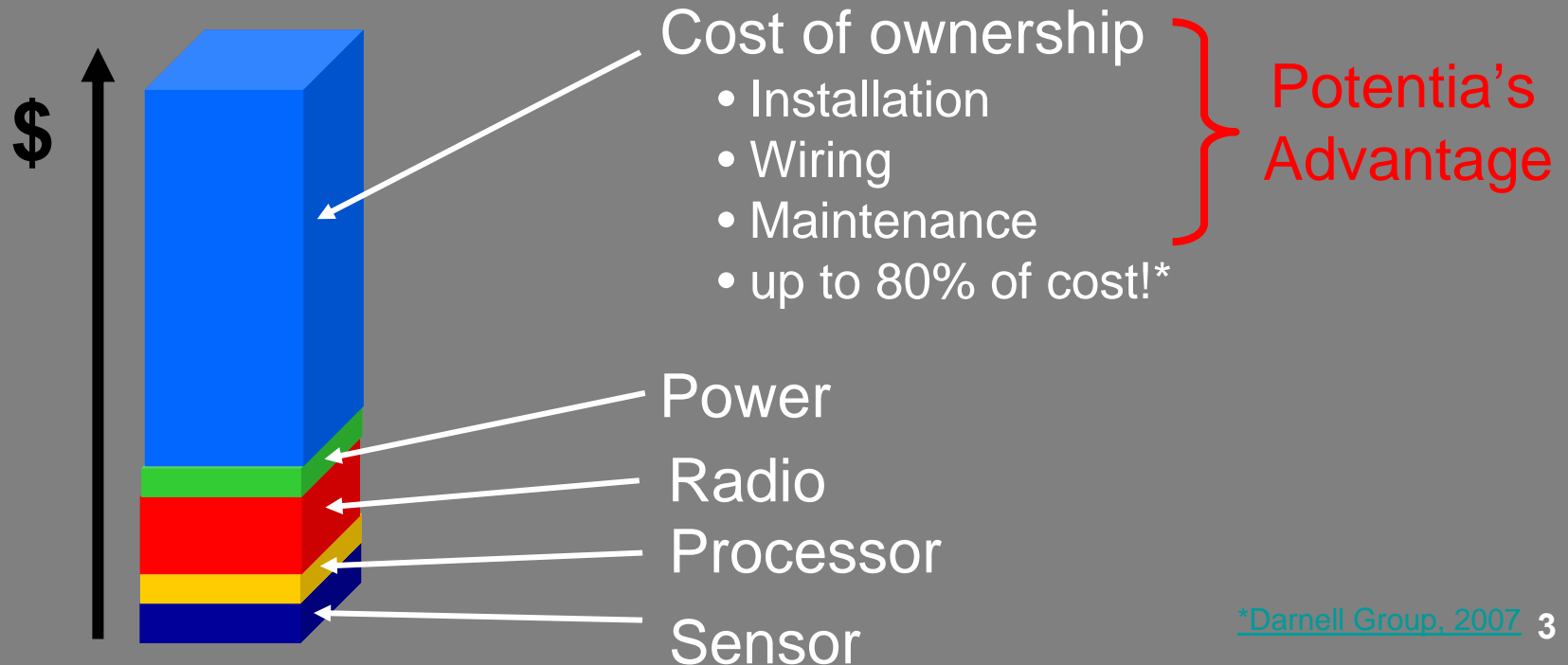
The Wireless Future is Now

Wireless Sensors Connect Everything

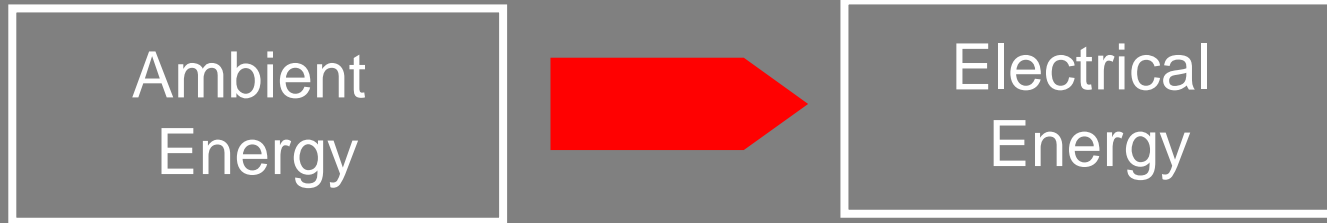


Wireless Sensors Need Wireless Power
Lack of this capability is the *biggest hurdle* to the wide deployment of wireless sensors

- Wireless sensors cost too much
- Why? → Cost of installation and maintenance is closely linked to power availability



Energy Scavenging Technology



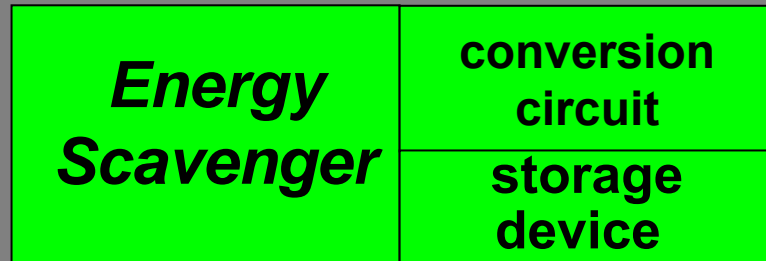
Not new to nature



Plants scavenge *evaporation* and *capillary action* to flow water up 300 ft. tall redwoods - transpiration

If you have an *environment-driven motion*, you have a potential *source of energy*

How does it work



Mimic plants & use evaporation (ΔP)



Generate flow of water



Imparts mechanical energy on polymer



Convert to electrical energy

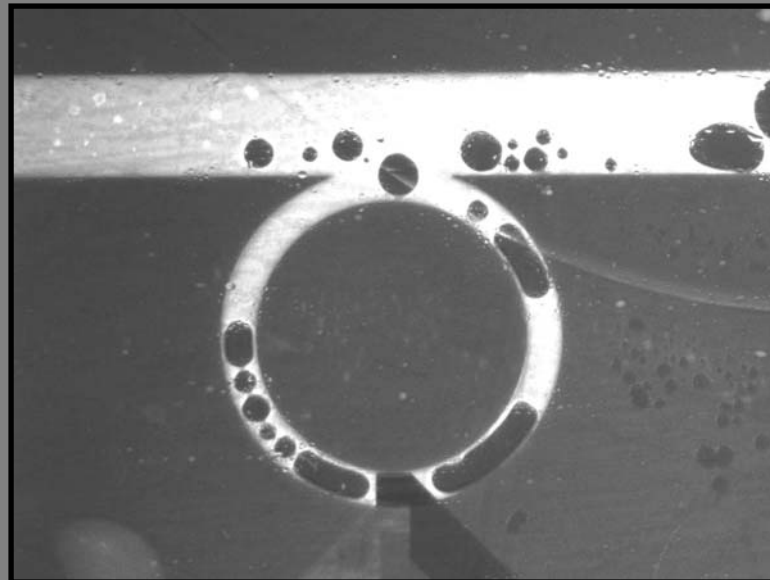
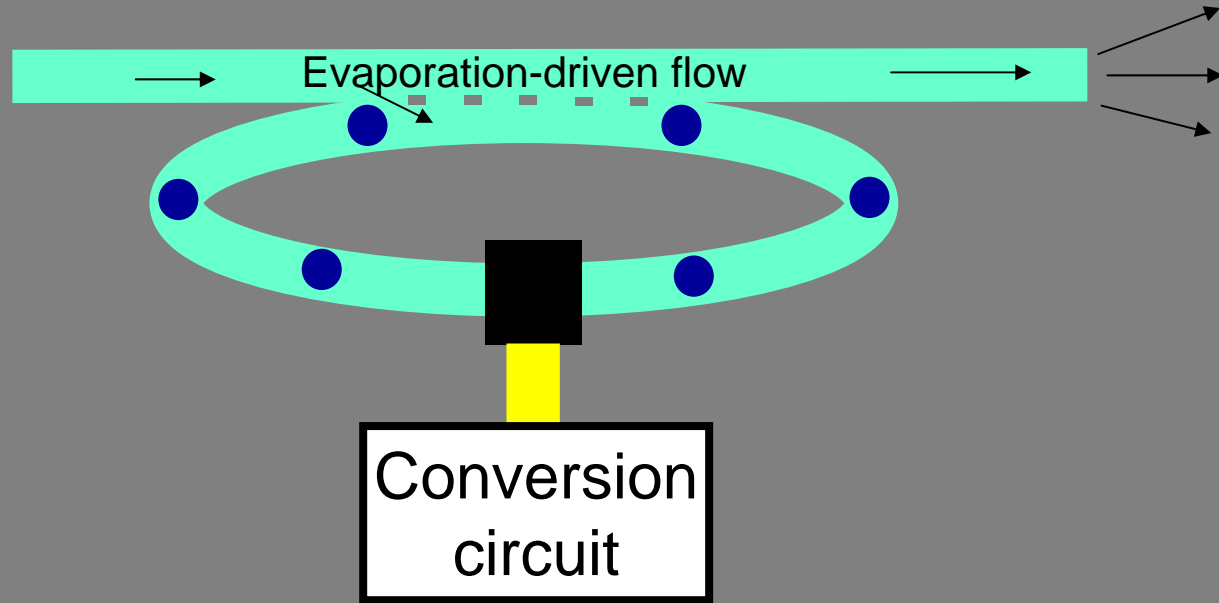


Store energy

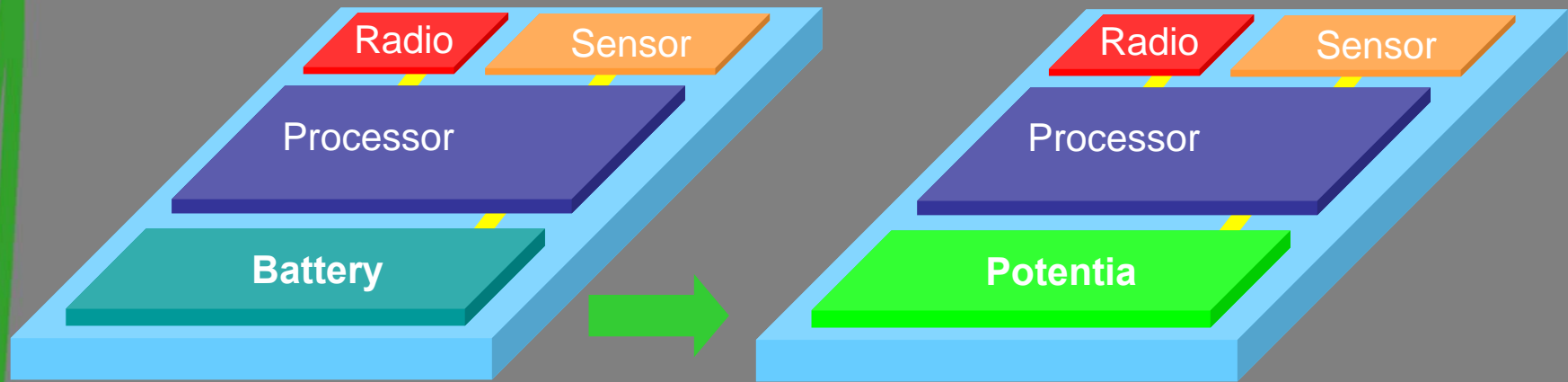
IOP Journal of Micromechanics and Microengineering, 2006

International Conference on Miniaturized Systems for Chemistry and Life Sciences, 2007

A Closer Look



The Potentia Solution

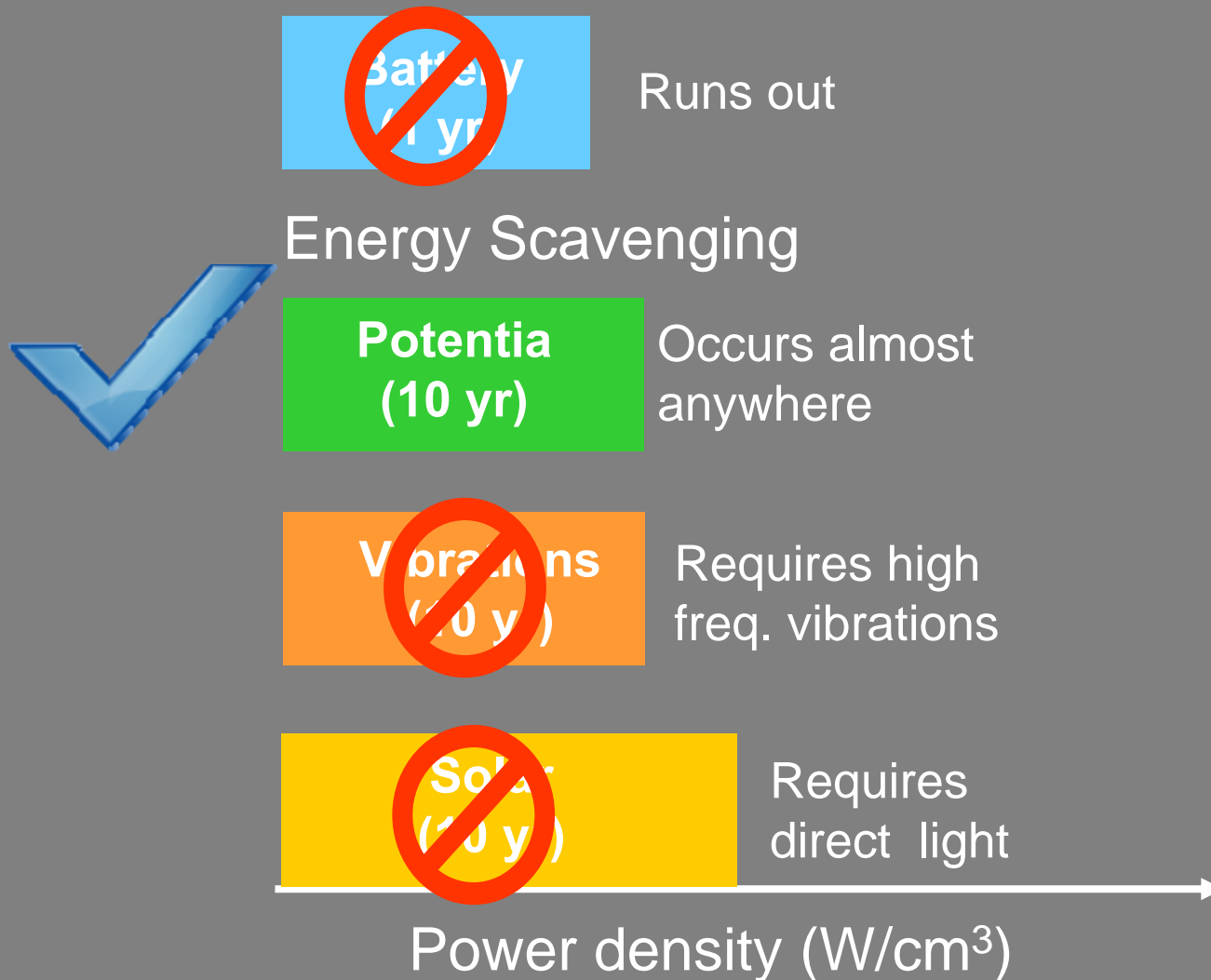


- Seamless transition for user: connects like a battery
- Same form factor as a battery
- 10x longer powering lifetime than current batteries
- Less maintenance costs
 - Less personnel, replacements, installations

Enabling Technology

Result: Wider deployment of sensors

Competing Technologies

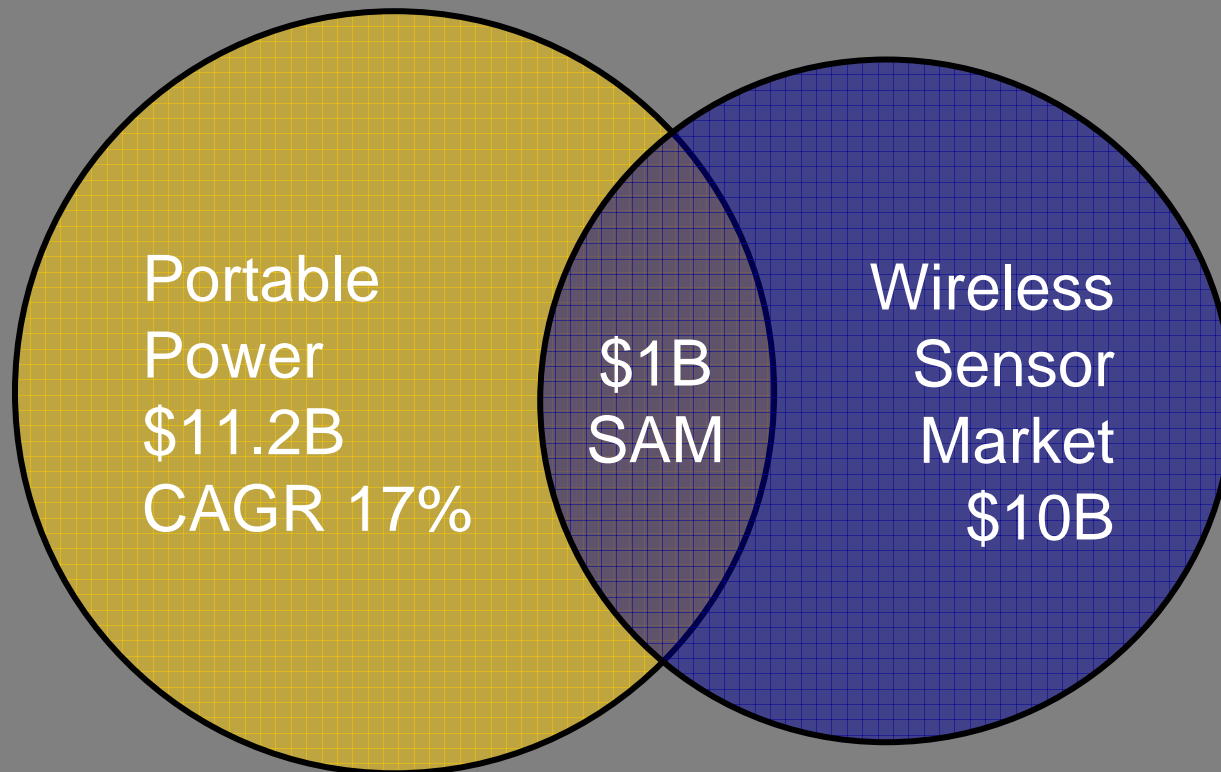


Competitive Advantage

- Potentia can scavenge energy where others can't
 - Evaporation emerging as energy harvesting mechanism
 - We are 1st to demonstrate with device
 - 2 to 3 year design cycle advantage
- Work developed at the University of Michigan as part of co-founder's doctoral research
- Co-founders have a patent-protected intellectual property portfolio

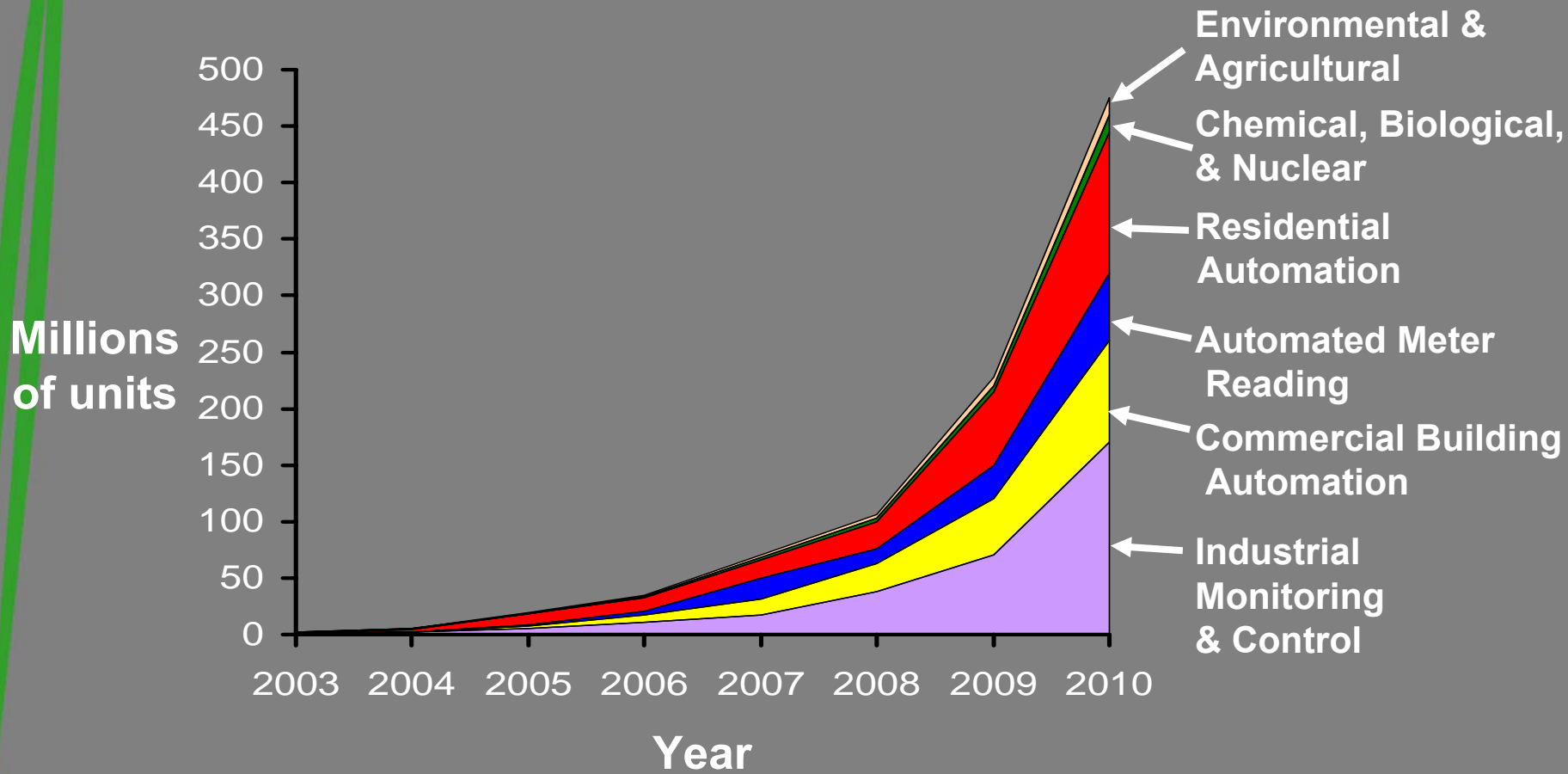
Industry and Market Overview

- Cost Parity with Current Power Sources
- 10x Performance Benefit



Wireless Sensor Market

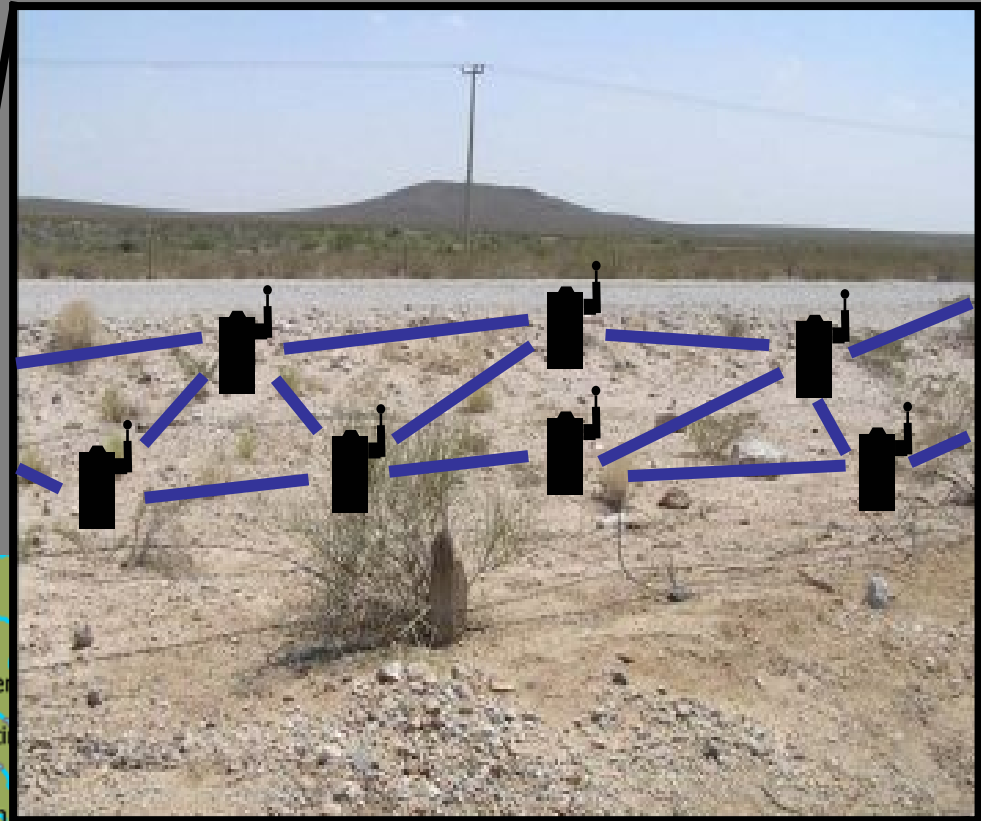
Global RF Modules for Wireless Sensors



Structural Monitoring Application



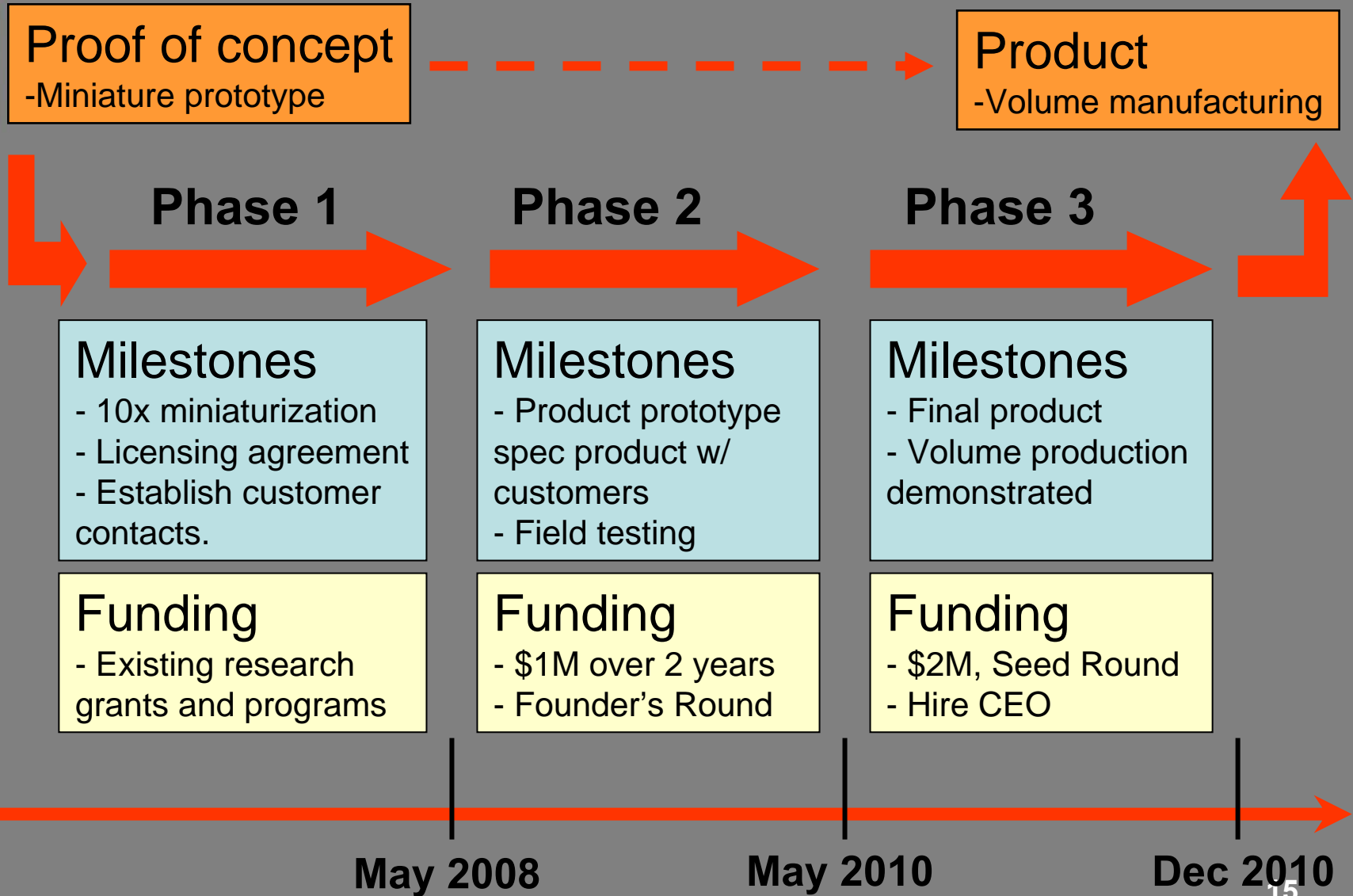
Security Application



- Sensor manufacturers
 - Honeywell – 1/3 of \$30B revenue from Automation and Control Division
 - Sensata – Formerly Texas Instruments Sensors and Control Business
 - Target smaller companies first to prove volume production

- Wireless communication providers
 - Dust Networks – low-power radio manufacturer
 - WirelessHART standard
 - Freescale – RF manufacturer
 - Zigbee standard

Roadmap





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- Darnell Group's Energy Harvesting, Micro Batteries & Power Management ICs Series, Applications and Customer Landscape (2007)
- Customer surveys conducted by B&B Electronics (2005)
- OnWorld, Marketing Research Firm for Wireless Sensors, 2004

- Co founders
 - Ruba Borno, PhD candidate in EE
 - Tzeno Galchev, PhD candidate in EE
- Technical Advisory Board
 - Michel Maharbiz, PhD, Professor in EE, U.Michigan
 - Michael McCorquodale, PhD, CTO of Mobius Microsystems
- Faculty Advisor
 - Paul Kirsch, U.Michigan

Competing Technologies

