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Wireless Strategy--Draft

Wireless Mission Statement

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To bridge the gap between emerging wireless small technology and the customers who need that technology by creating and managing an infrastructure for securing IP; productizing technology and developing customer pull.

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Wireless Objectives

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- Innovation – investigate new/novel wireless technology;
- Follow stage gate process – evaluate technology (go/no-go);
- Develop IP – through Universities, Government Labs, and Institutions (i.e., UCB, MIT, UofM, DARPA, WL, BSAC);
- Combine – early stage companies with mature wireless companies by incorporating proprietary technology with COTS.

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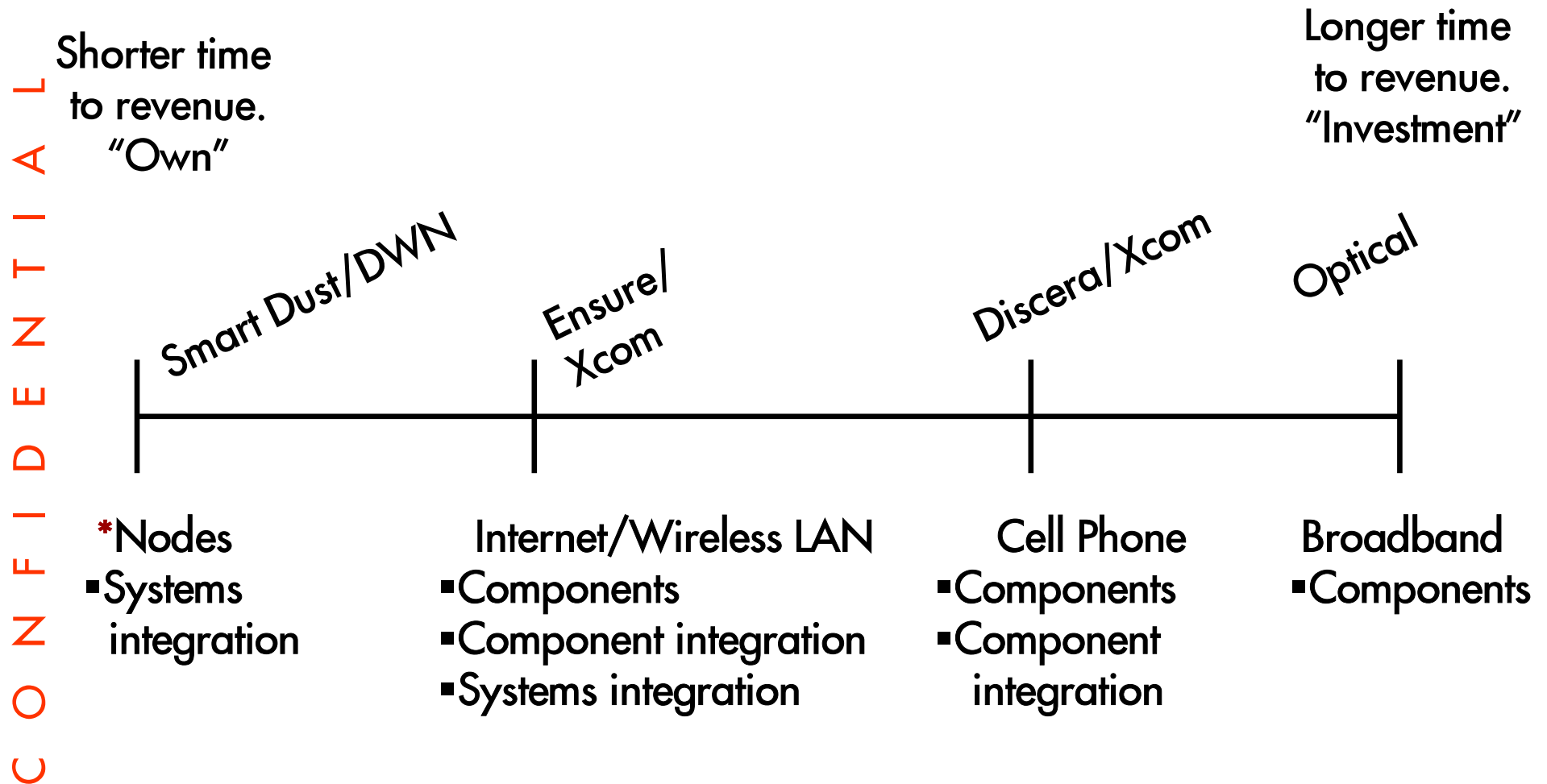
Wireless Direction

- Major contributor to growth of Ardesta Product Companies as part of Communications Sector
- Recognize trade-offs in continuum of wireless products and adjust activities accordingly:
 - Systems Integration
 - Distributed Wireless Networks/"Nodes"
 - Component Integration
 - Internet/Wireless LAN
 - Cell Phone architecture
 - Component supplier
 - Broadband back end architecture



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Wireless Value-Added Continuum



*Nodes: Real Time Computing Systems (RTCS), Real Time Control Systems (RTCS), Real Time Monitoring (RTM),



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Wireless Action Plan Strategy

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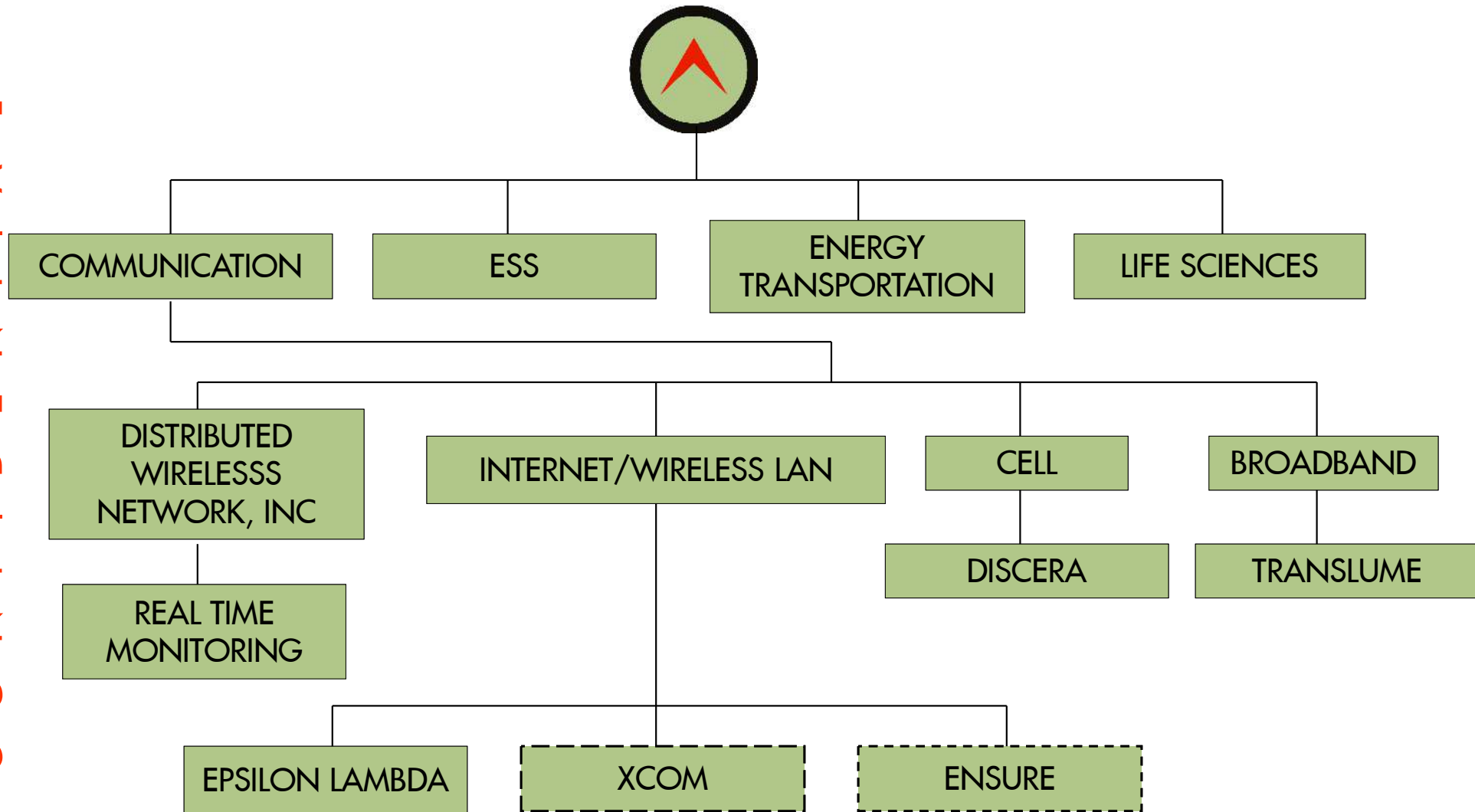
"Nodes"/DWN	Internet/Wireless LAN	Cell Phone	Broadband back-end
High value-added as provider of full systems integration. Companies must demonstrate an understanding of interaction within its prevailing architecture and standards for their products.	Moderate to High value-add as combination of systems integrator and component integrator. Companies must demonstrate contribution to strategic position within market space.	Low to Moderate value added. Achieve some level of added value by integrating components. Companies must demonstrate ability to integrate their own technology into existing phone architecture.	Components represent small piece of solution. Price and reluctance to change will be driving decisions. Difficult to add value. Value added products have a dramatic effect on cost and is differentiated by component performance for creating competitive advantage.
Shorter time to revenue as some COTS available and providing full solution. Higher margin opportunities.	Slightly longer time to revenue due to more proprietary development and some need for component integration. Still good margin opportunities.	Long time to revenue due to requirement to build component into overall system. Shrinking margin opportunities.	Extremely long time to revenue due to long lead times for large scale networking equipment. Small margin opportunities.
Strategy "Own" majority interests in product companies by starting up or acquiring interests – HOLD.	Strategy "Invest" in larger stakes in product companies – HOLD for IPO.	Strategy "Invest" in minority stakes in product companies or start-up companies for strategic sale to suppliers further up the value chain.	Strategy "Invest" in minority stakes in a select, small number of product companies. Consider enabling a "macro" component supplier with Small Tech.



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Distributed Wireless Network Investments

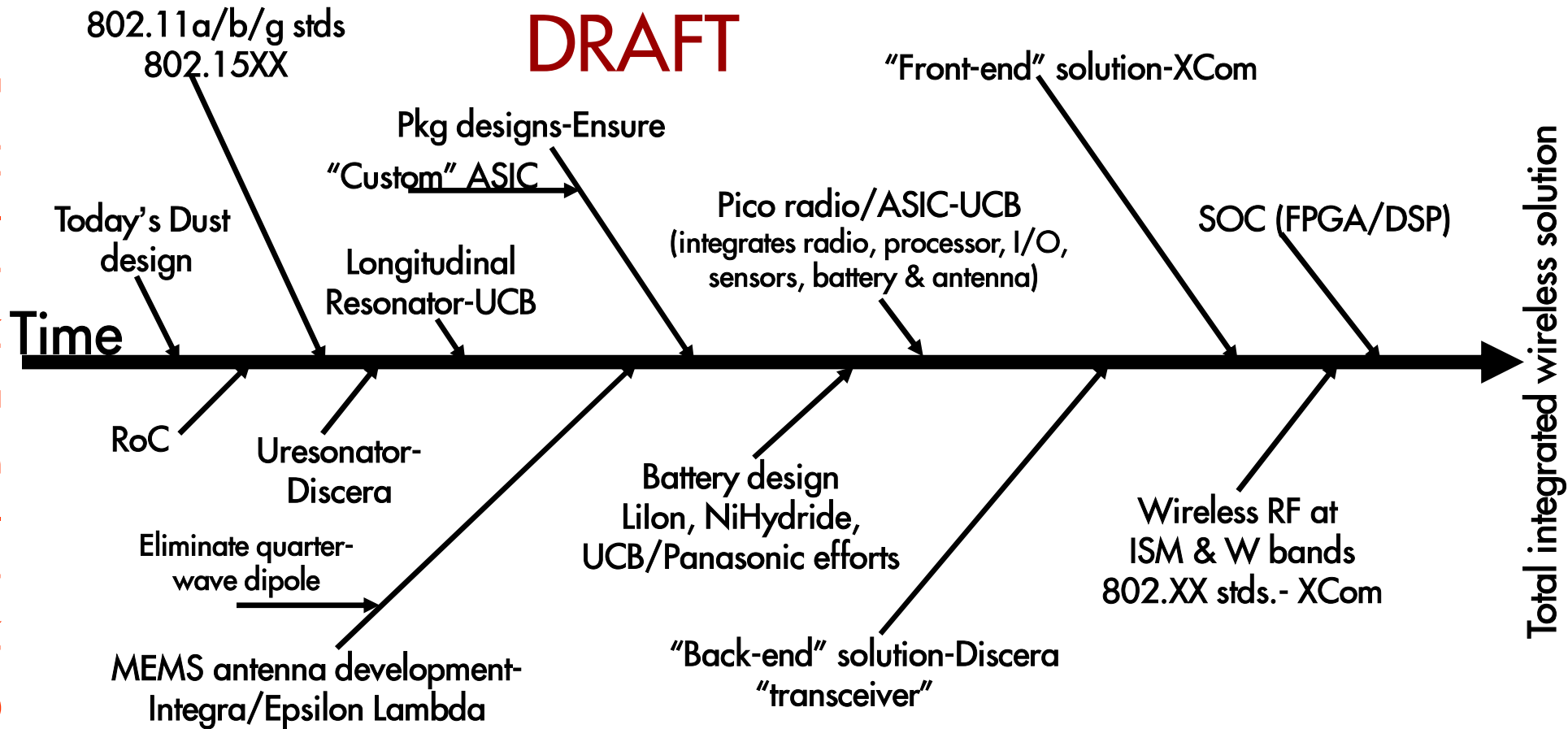
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Wireless Core Technology Timeline

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Front-end solution-MEMS routing circuit and phased array replaces 10-15 discrete components (i.e., diodes, transistors, amps, and antenna).

Back-end solution-MEMS integration of mixer filters, switches, filters, resistors, capacitors on a single chip.

Custom ASIC-integrates radio, Uprocessor, I/O, & sensors (no battery or antenna, not until Pico Radio).



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Potential Wireless Technologies & Customers

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- **MicroAssembly Technology**

- **Blackstone Technology**

- **Sophia Wireless**-Diplexers, Waveguide Diplexers, WG filters for broadband fixed wireless for local multipoint distributed services (LMDS). Digital TV, radios.

- **Merit Technology**

- **Caveo**

- **Mayo Medical Venture**-RF MEMS Switch Technology

The switch topology utilizes electrostatic comb drives electrically isolated from a contact shuttle.

- **Ford Motor Company**

- **Sony**

- **Sensatex**-Developers of textile monitoring garments (i.e., the SmartShirt)

- **UWB**/Terahertz Electronic Pulse Time Domain Spectrometer

Time domain spectrometers (TDS) operating in the THz (~500 to 3000 GHz) detector of absorption bands in gases, liquids and solids over broad wavelength ranges.

- **Others**



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Wireless Summary

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- Ardesta to establish new company to manage distributed wireless networks;
 - With high value-add,
 - Shorter time to market,
 - Greater margin opportunity through full systems integration,
 - First product(s) to be DWN kits for Transportation, or Communication, and other targeted markets,
 - First products for DWN could be condition based maintenance and temperature network monitoring (i.e., hot water tanks),
 - DWN kits scheduled for October '02.
- Ardesta to continue to pursue investments in component and component integration product companies which add value and are synergistic to our portfolio resources;
- Ardesta to lead effort for acquisition and aggregation of IP on behalf of product companies;
- Ardesta is prepared to launch DWN Inc. by mid Q3, to provide high market value and small tech needed to assist in growing and supporting our current and future portfolio companies.



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