



WSURF Presentation

Growing a Business from University Roots

Donald Tilton, Founder

ISR Company Overview/Technology

University vs. Business

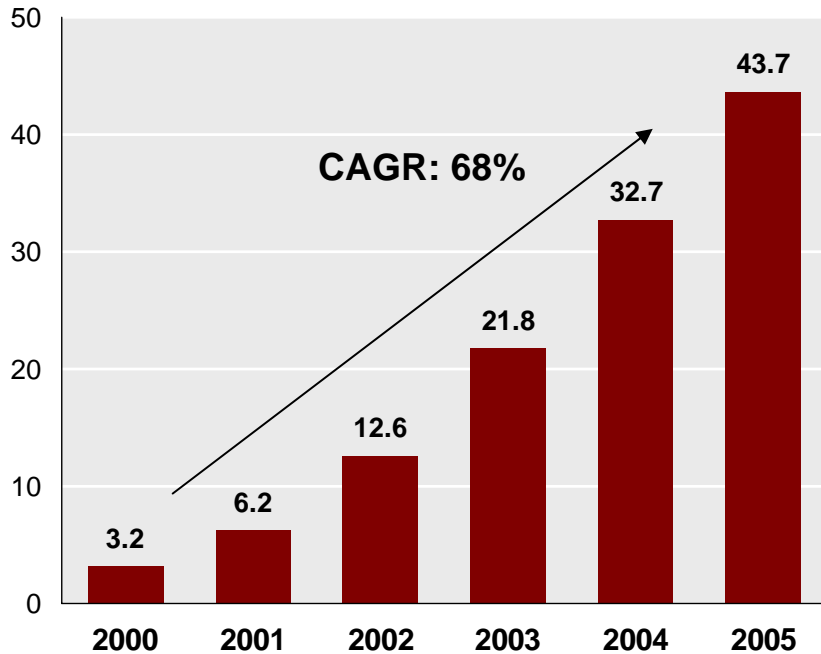
Start-Up Ingredients for Success

Regional Benefits/Challenges

Improving the Business Environment

ISR is a leader in thermal management solutions

ISR Historical Revenue (\$MM)



Founded in 1988 to provide Innovative Thermal Solutions

280+ Employees, in 5 Locations

Historic focus on demanding U.S. Government applications

\$43.7MM revenue in 2005, up 68% annually since 2000

High value technology, resulting in a \$134MM forecasted Government business by 2010

Patented technologies, applicable to both Government and Commercial sectors

Early wins in Commercial sector – indicators of future success

Stable and Profitable ... Positioned for Growth

Facilities/Locations

Liberty Lake, Washington

- Corporate Headquarters
- Commercial Headquarters



Pullman, WA

- Collocation with WSU & U of I
- R&D, Advanced Development



Seattle, WA

- Commercial Sales & Marketing
- Data Center Showcase



Mountainview, CA

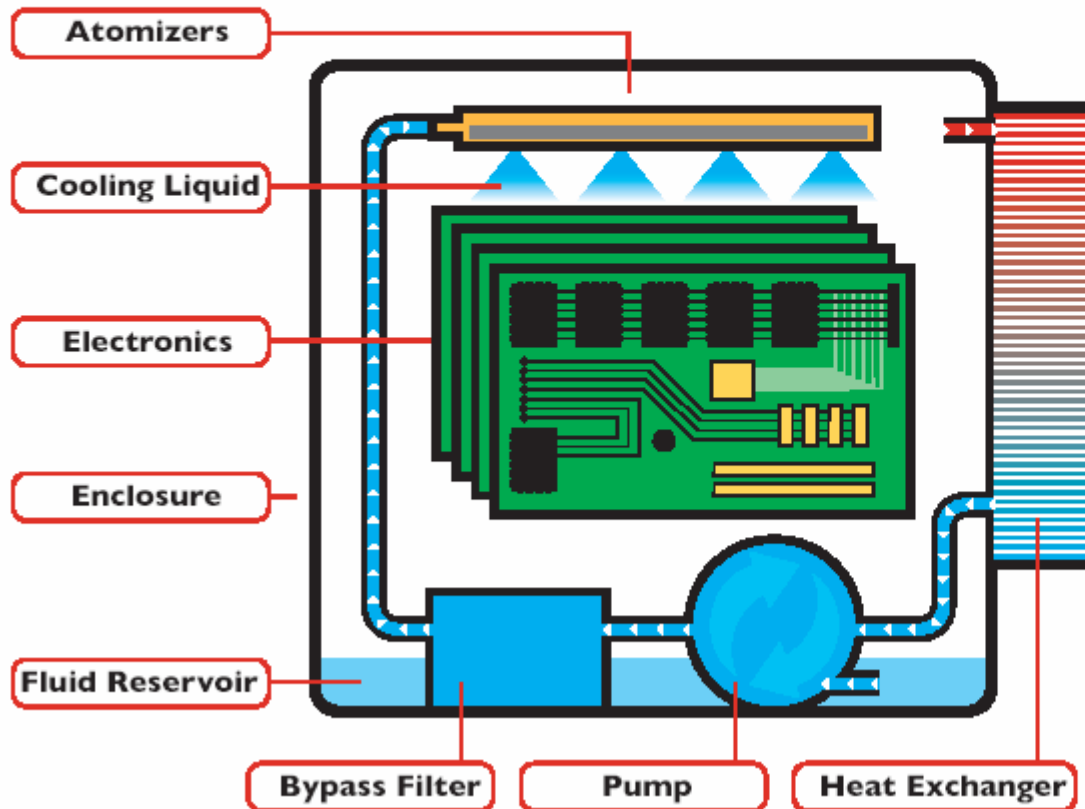
- Silicon Valley Systems Center



Global Cooling Solutions

HOW SPRAYCOOL™ TECHNOLOGY WORKS

A non-conductive and non-corrosive coolant is atomized and sprayed directly onto electronics to provide cooling. The coolant vaporizes and heat is rejected to the enclosure and/or through a heat exchanger, condensing the vapor back into a liquid state. The process continuously cycles within a closed loop sealed enclosure that prevents corrosive environmental contamination from harming sensitive electronics.



SPRAYCOOL™ BENEFITS

- Increased processor density
- Reduced overall system size & weight
- Protects electronics from harsh environments like dirt, salt, water, and sand.
- Energy savings due to increased cooling efficiency
- Reduced noise levels
- Effective EMI and RFI shielding
- Self-cleaning system with flexible service options
- Ability to pre-heat electronics for cold temperature applications

Commercial Performance & Environmental Isolation

Sun and Intel Servers, Cisco Routers, Switches, nVidia Graphics, etc.

- SprayCool eliminates exposure to sand, humidity, salt spray, etc. which has a direct correlation with electronics failures
 - Many examples of aborted/failed military operations due to adverse environmental conditions



AH-64D Apache Landing in Iraq



USMC EFV incorporates SprayCool



Enhanced Performance

Enables high processing density, reduced volume/weight/power, and environmental protection to 70,000 ft. altitude

- Same Electronics Suite for both U2 and Global Hawk



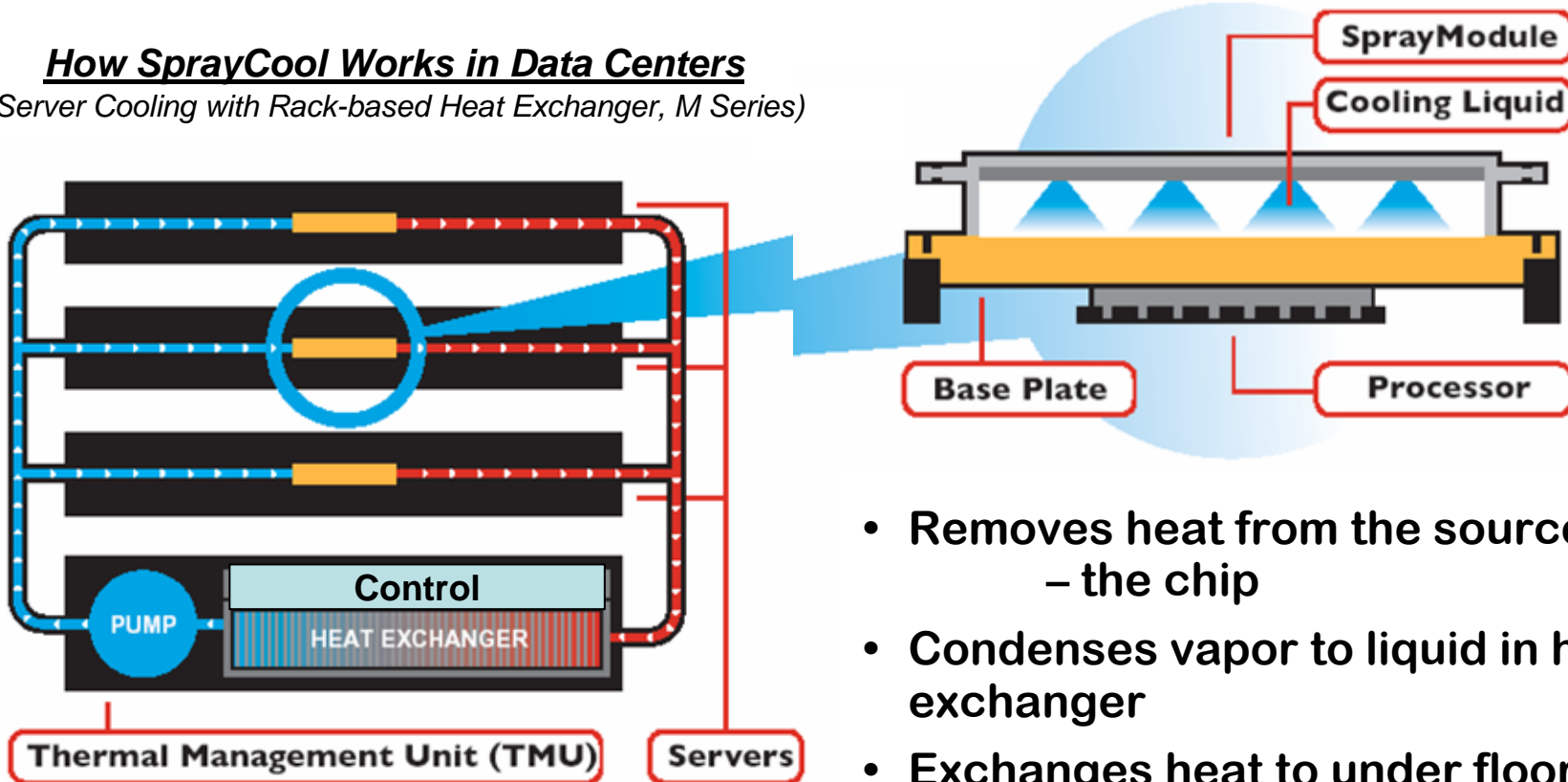
- Enabled COTS
- Dumps Heat to either Fuel Tank or RAM Air



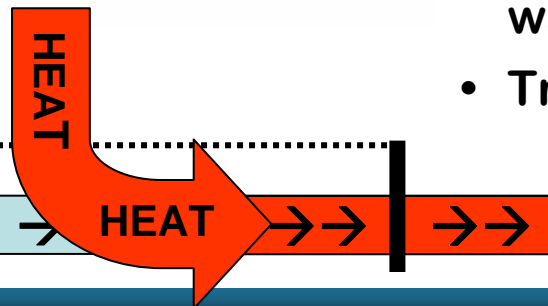
Data Center Solutions

How SprayCool Works in Data Centers

(Server Cooling with Rack-based Heat Exchanger, M Series)



- Removes heat from the source – the chip
- Condenses vapor to liquid in heat exchanger
- Exchanges heat to under floor water line
- Transports heat outside the facility



→ Water Line → → → HEAT → → → Outside Facility = Lower HVAC Costs

M-Series, Data Center products

M-SERIES **SprayCool System Architecture** *For Rack Mounted Equipment*

Summary

- Rack based system
- Installed after market in existing or new data centers
- Cools processors

Key Benefits

- Delivers 3x space densification
- Enables 3x computing processing
- Dramatically decreases power use dedicated to cooling
- Decreases server failure caused by heat damage

LLIX SprayCool Install



Academia to Business

Academic Success

- Tunnel Vision focus on Primary Discipline
- Commitment to Excellence and Leadership in a Specific Technology or Field of Focus
- Discovery: “How **Does it Work?**”
 - ~~ 1-2% of the job!
- Internally Driven
- Economics Secondary
- Rewards based upon Peer Review, Publication, etc.

Business Success

- Broad Multidisciplinary Focus
- Commitment to Excellence in Business Management, Marketing, Finance, etc., Technology is Secondary
- Maturity “How it **DOES NOT FAIL!**,” and Go to Market
 - ~~ 98% of the job!
- Market/Customer Driven
- Economics Rule
- There are only three things that matter: Profit, Revenue, and Growth!

Start-Up vs. Successful Organization

Start-Up

➤ People Skills

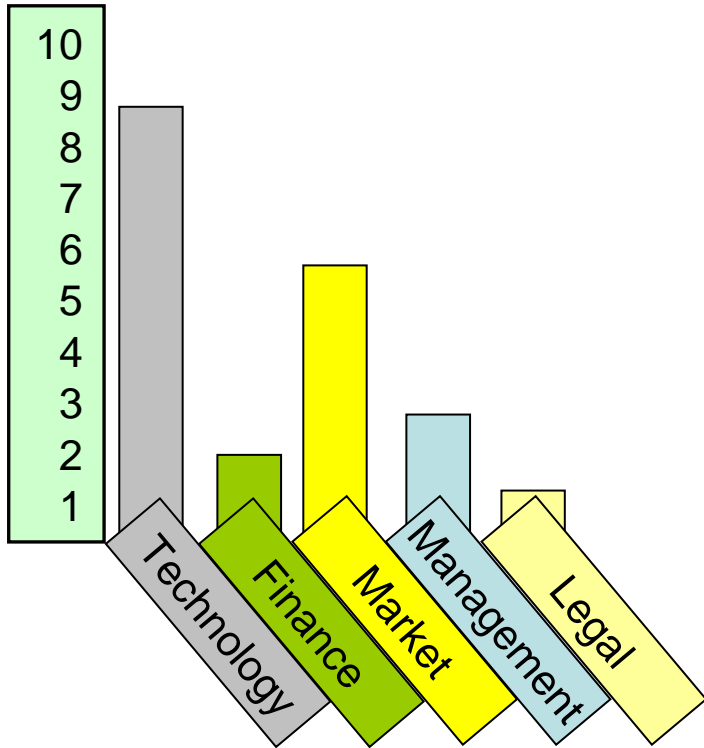
- Built around an “Individual Dream”
- Individuals more Tech Focused, must “Multi-Task” and Organization is Undeveloped
- Communication is Simple, but Informal
- Policy/Procedure Ad-Hoc

Successful Company

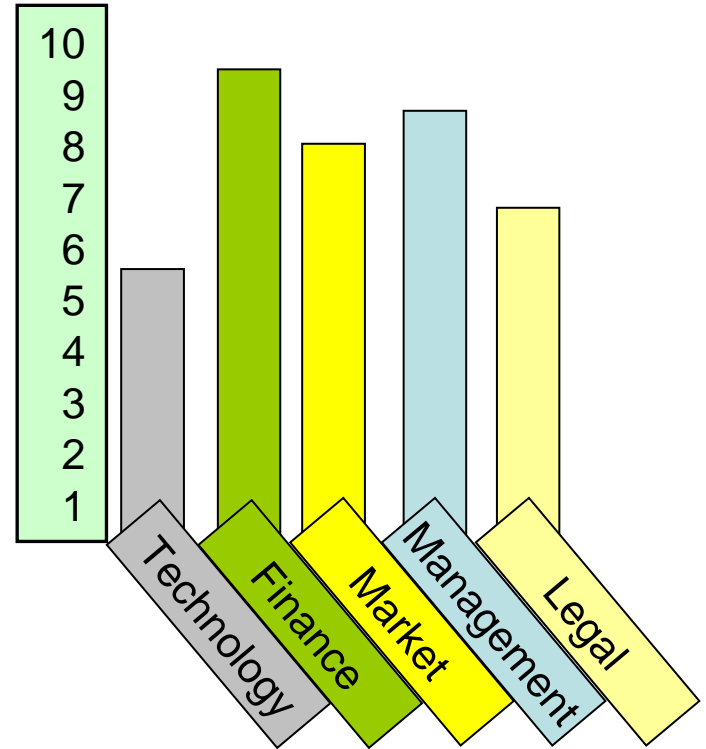
➤ Management Focus

- Dreams don’t Count!
- Management must focus on Professional Development and map Individual’s Skills to Well Defined Roles, and Match the Organizational Design to the Market/Business Requirements
- Communication must become formalized and Regular
- Policy is Balanced and Fair, and Procedure Optimizes Execution and Quality

Ingredients for Success



How Most Entrepreneurs Start



What They Really Need to Succeed

How Does the Local Business Environment Help Fill the Gap??

Regional Considerations

Benefits

- Two Major Universities create Broad, Highly Educated Talent Pool
- WSU/Incubator and Port Provide excellent facility options
- Excellent Quality of Life, Great Schools, etc.
- SBDC, SBIR, STTR WSURF provide great resources

Challenges

- Geographic Isolation and Lack of Business Base make Recruiting Difficult
- Price not generally competitive with larger Metropolitan areas
- Relatively High Cost of Living
- Access to Capital (VC, Banking) difficult
- Transportation is a major problem

What can we do better?

- Improve Access to Capital, i.e. Local VC Fund, Venture Banking, Risk Lenders
- Coordinate programs with Accounting/Legal firms like DeLoitte, Perkins, etc to provide Start-up assistance
- Form Advisory Board/Forums
- Improve Interdisciplinary Research and Education programs
- Emphasize WSURF “Out-reach”/”In-reach” programs
- Integrate a “Strategic Plan” with Community, University, Port, etc. to Build centers of Excellence and a “Critical Mass” around target Disciplines/Markets