



# **USURF**

## **Board of Trustees**

### **TCO Update and USU and USTAR An Overview and Update**

Presented By  
Ned M. Weinshenker

**September 29, 2006**



# TCO Changes

- Steve Kubisen resigned as of early September
- Ray Devito will be Director of Physical Sciences and IT
- Henry Nowak will be Director of life Sciences
- Each Director will hire a Licensing Associate in their area of expertise
- Allan Wood continues in his role
- LJ Bolton continues as Office manager and adds Executive Assistant to the VP
- The TCO will have a major role in creating the commercial orientation of the USTAR Teams

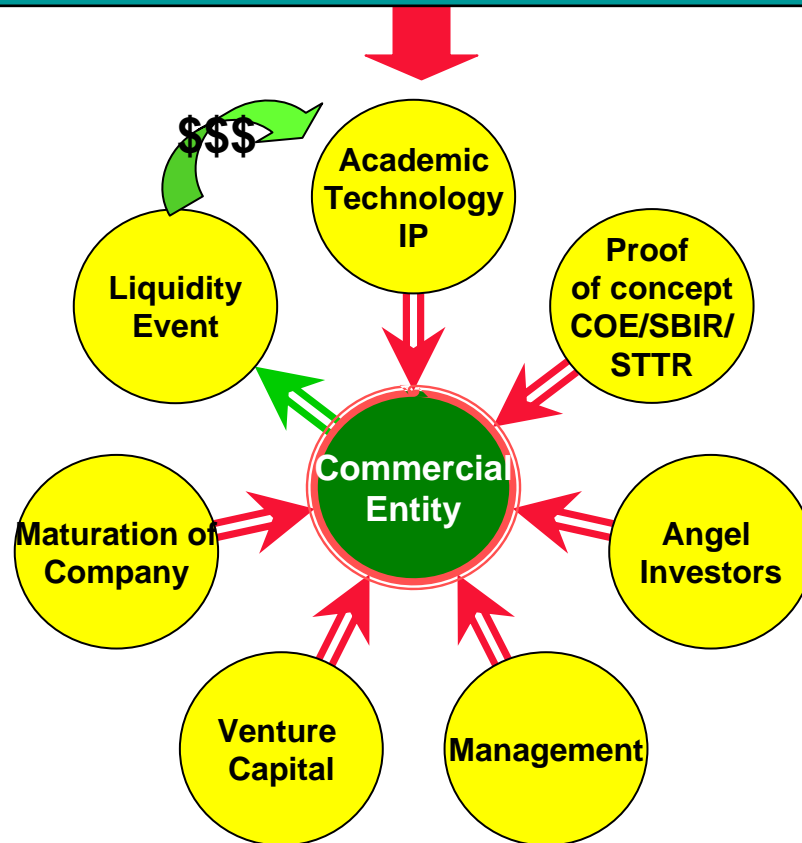
# TCO Activity for SDL

|                           | Invention Records processed | Patents               | Still active |
|---------------------------|-----------------------------|-----------------------|--------------|
| <b>FY07</b><br>As of 9/28 | 9                           | 2 filed<br>3 in prep. | 5            |
| <b>FY06</b>               | 20                          | 3 filed               | 3            |
| <b>FY05</b>               | 13                          | 4 filed               | 4            |



# University Driven Economic Development Wheel of Fortune

NIH, NSF, Foundations, DOD, DOE, etc.  
USTAR





# Outline of Presentation

- **Passage of legislation SB 75 March 2006**
  - What did it say?
  - Governing Board
- **Overview of USU USTAR areas of focus**
- **Recap of FY 2006 USU USTAR Hires**
  - Krishna Shenai & David York
- **Exciting new proposals for FY 2007**
  - Biofuels
  - Directed Sensor Technology
- **BIRI Building**
- **Funding requests**
- **Matching funds for Building**



# USTAR Governing Board

1. Dinesh Patel, Chair- a former trustee for Utah State University who is a founding partner of vSpring Capital and has founded other biotechnology companies.
2. Scott Anderson, Vice Chair- President of Zions First National Bank,
3. Hunter Jackson,- Former CEO of NPS Pharmaceuticals
4. Cathy Petti,- Medical Director of ARUP Laboratories' infectious disease lab.
5. Dan Olsen,- Prof at BYU and a leader in researching human-computer/robot interaction
6. Charlie Precourt,- a former astronaut who is now Vice President of ATK Launch Systems Group.
7. Jack Sunderlage,- president of Contentwatch, a provider of Internet management software and past Chair of UITA (now UTC)
8. Jim Dreyfous,- co-founder of the venture capital firm UV Partners.
9. Ed Alter, State Treasurer

**Ted McAleer-Executive Director**



# USTAR Process (as we know it today)

- Universities create business case for a USTAR hire or team
- Universities present proposal to USTAR Board at monthly meetings
- Discussion and due diligence with



# SB75- What did it create for USU?

- Funding from Economic Dev. not Education
- Programmatic and team funding of \$6 M/year ongoing
  - Bring top flight researchers to Utah who can:
    - Secure significant grant/contract revenue
    - Create patentable and commercializable technology
    - Spin out companies and create high tech jobs in Utah
  - Align with Utah's Cluster initiative
- \$60 M for a new research building
  - **Requires a \$10 M USU match**
- Participation in the Technology Outreach funding of \$4 M/year
  - Perhaps one center at the USU Vernal Campus

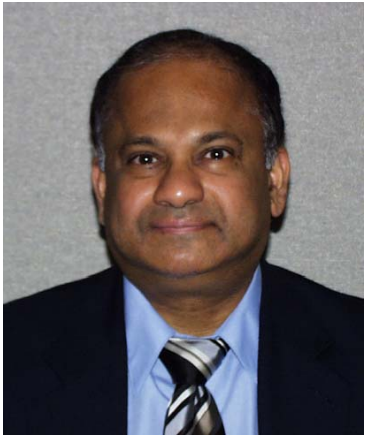
# USU Areas of USTAR Activity

## GOED/USU Clusters

| USTAR Hire/Proposed Center |                                                                        | Intelligent & Autonomous Systems | Advanced Nutrition | Energy & Water | Infectious Diseases | Aerospace & Homeland Security | Microbe Bio-technology |
|----------------------------|------------------------------------------------------------------------|----------------------------------|--------------------|----------------|---------------------|-------------------------------|------------------------|
| <i>existing</i>            | <b>Advanced Nutrition/Obesity</b><br><i>(David York)</i>               |                                  | ✓                  |                |                     | ✓                             |                        |
| <i>existing</i>            | <b>Semiconductor Chips/Wireless Sensors</b><br><i>(Krishna Shenai)</i> | ✓                                |                    | ✓              |                     |                               | ✓                      |
| <i>new</i>                 | <b>BioFuels</b><br><i>(3 hires TBD)</i>                                | ✓                                |                    | ✓              |                     |                               | ✓                      |
| <i>new</i>                 | <b>Directed Sensors/3D Imaging</b><br><i>(5 hires TBD)</i>             | ✓                                |                    | ✓              | ✓                   | ✓                             | ✓                      |

# USTAR Hires at USU (FY 06)

## Dr. Krishna Shenai – Intelligent Systems

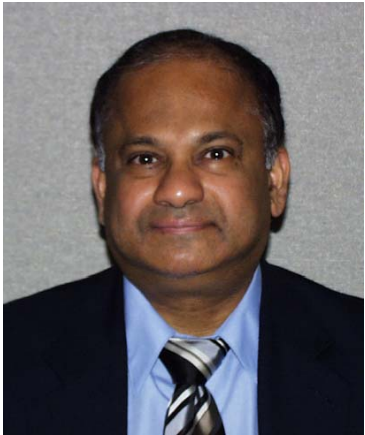


### Background

- Ph.D. in Electrical Engineering, Stanford, 1986
- 100+ peer-reviewed papers in solid-state energy conditioning in commercial, military & space applications
- 15 patents, 10 pending
- Co-founded 3 high-tech start-up companies: LoPel Corp (1996); Shakti Systems, Inc. (2002); Zeus Semiconductors (2003)

# USTAR Hires at USU (FY 06)

## Dr. Krishna Shenai – Intelligent Systems



### Research strategies formulated

- Low-power wireless chip and OEM devices
- High-power semiconductors and converters
- Bio/Nano sensors and wireless devices

# USTAR Hires at USU (FY 06)

## Dr. David York – Advanced Nutrition



### Background

- Ph.D. in Physiology, Univ. Southampton, England, 1969
- Chief of Basic Science Research and Head, Experimental Obesity Research Group (Pennington Research Center, Baton Rouge, LA)
- Research interests: animal models of obesity; mechanisms for control of food intake and nutrient selection; glucocorticoid dependence in obesity
- Authored or co-authored 200+ peer-reviewed papers
- Garnered >\$24 M research support

# USTAR Hires at USU (FY 06)

## Dr. David York – Advanced Nutrition

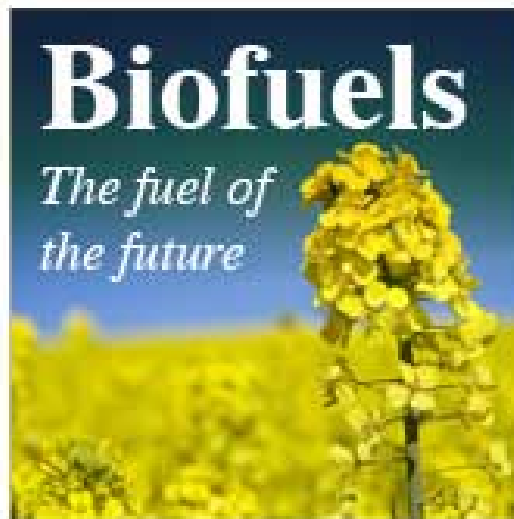


### Initial Research Targets Identified

- Brain signaling pathways that regulate dietary fat intake
- Effects of a natural peptide enterostatin on metabolism, angiogenesis and neuroprotection
- Mechanisms through which voluntary exercise prevents neurodegeneration

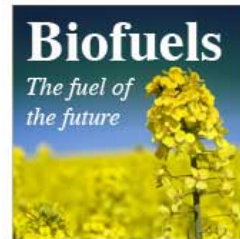
# USU Biofuels Initiative

## USTAR Proposal



### Prepared by the USU Biofuels Team:

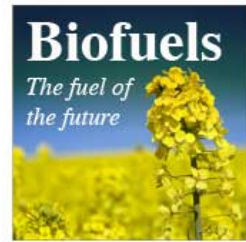
|                       |                      |
|-----------------------|----------------------|
| Byard Wood (Eng)      | Jeff Broadbent (Ag)  |
| Brent Barney (Sci)    | Carl Hansen (Ag)     |
| Scott Ensign (Sci)    | Jerilyn Hansen (SPO) |
| Conly Hansen (Ag/Eng) | Henry Nowak (TCO)    |
| Steve Kubisen (TCO)   | Ron Sims (ENG)       |
| Lance Seefeldt (Sci)  | Allan Wood (TCO)     |



# Mission & Goals

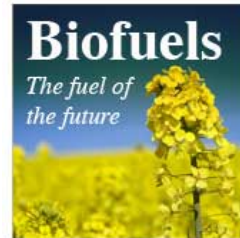
## **New business opportunities for Utah based on Biofuels as sustainable, renewable energy sources with the following characteristics:**

- Economically competitive products using Utah's abundant natural resources
- Efficient biomass production/conversion to energy with valuable byproducts
- Net positive or neutral effect on greenhouse gases
- Significant business opportunities for rural Utah
- Complement to U of U Fossil Fuels Project

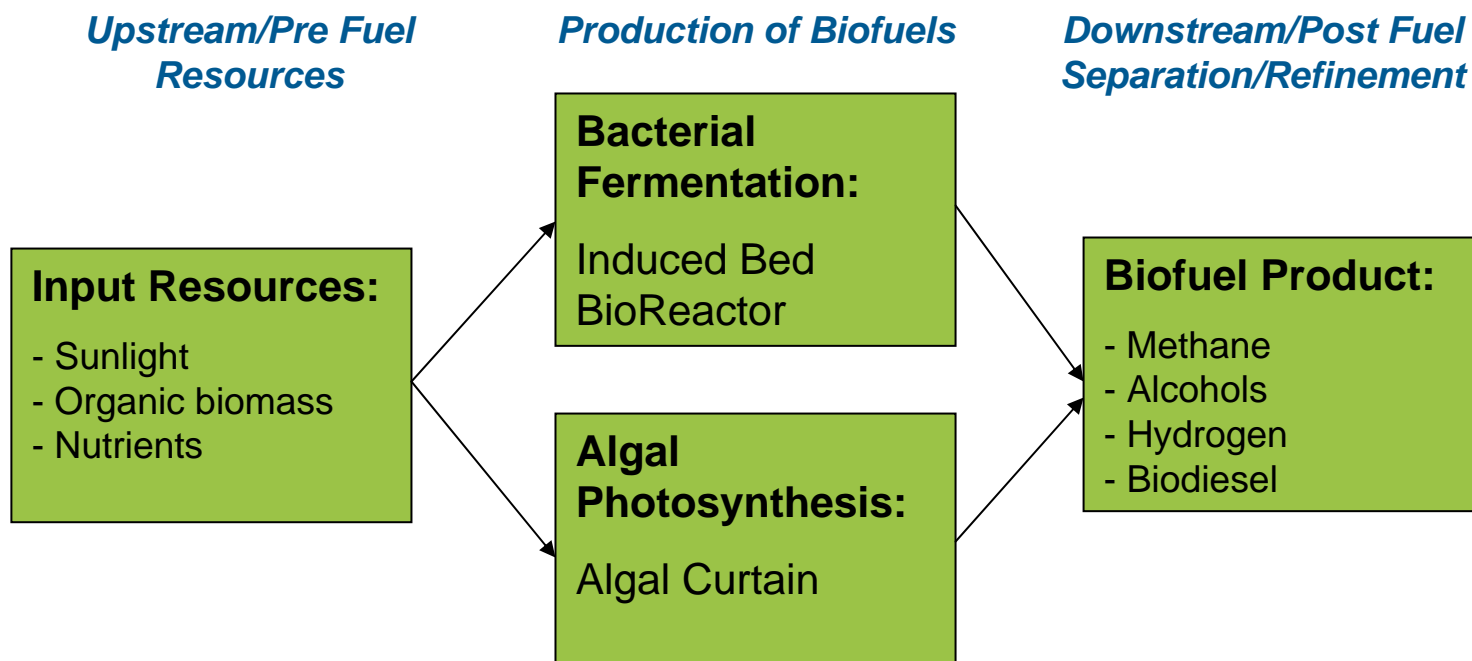


# USU Strengths

- 8 core faculty in 4 colleges (+25 collaborators)
- \$6.8 M current and recent funding in past 3 years
- Component facilities available, but needs integration and diversification at lab and pilot scale
  - Induced Blanket Reactors, solar collectors, fermenters, etc.
- Center of Excellence Funding
  - Center for Profitable uses of Ag Byproducts (graduated 2005)
  - Center for Solar Biofuels Technology (bus. team 2006)
- Spin Out & Industry Relationships in place
  - Andigen, Hansen Engineering, ITR and others
- Initial intellectual property
  - 1 patent issued and 4 pending



# USTAR Hires Needed



# USU Directed Energy Sensors Initiative

## USTAR Proposal



**Prepared by the USU Directed Energy Sensors Team:**

|                    |                         |
|--------------------|-------------------------|
| Robert Pack (Eng)  | Jennifer Bowman (SDL)   |
| Gail Bingham (SDL) | Paul Israelsen (Eng)    |
| Ray Devito (TCO)   | Tom Wilkerson (Sci/SDL) |
| Allan Wood (TCO)   |                         |



# Mission & Goals



## **Create significant new business opportunities for Utah based on world-class core competency in laser-based cameras:**

- Apply current and future IP to commercial applications
- Boost the creation of economically competitive products
- Eventually encompass other innovative sensors
- Contribute to U.S. homeland security and national defense

# Economic Drivers

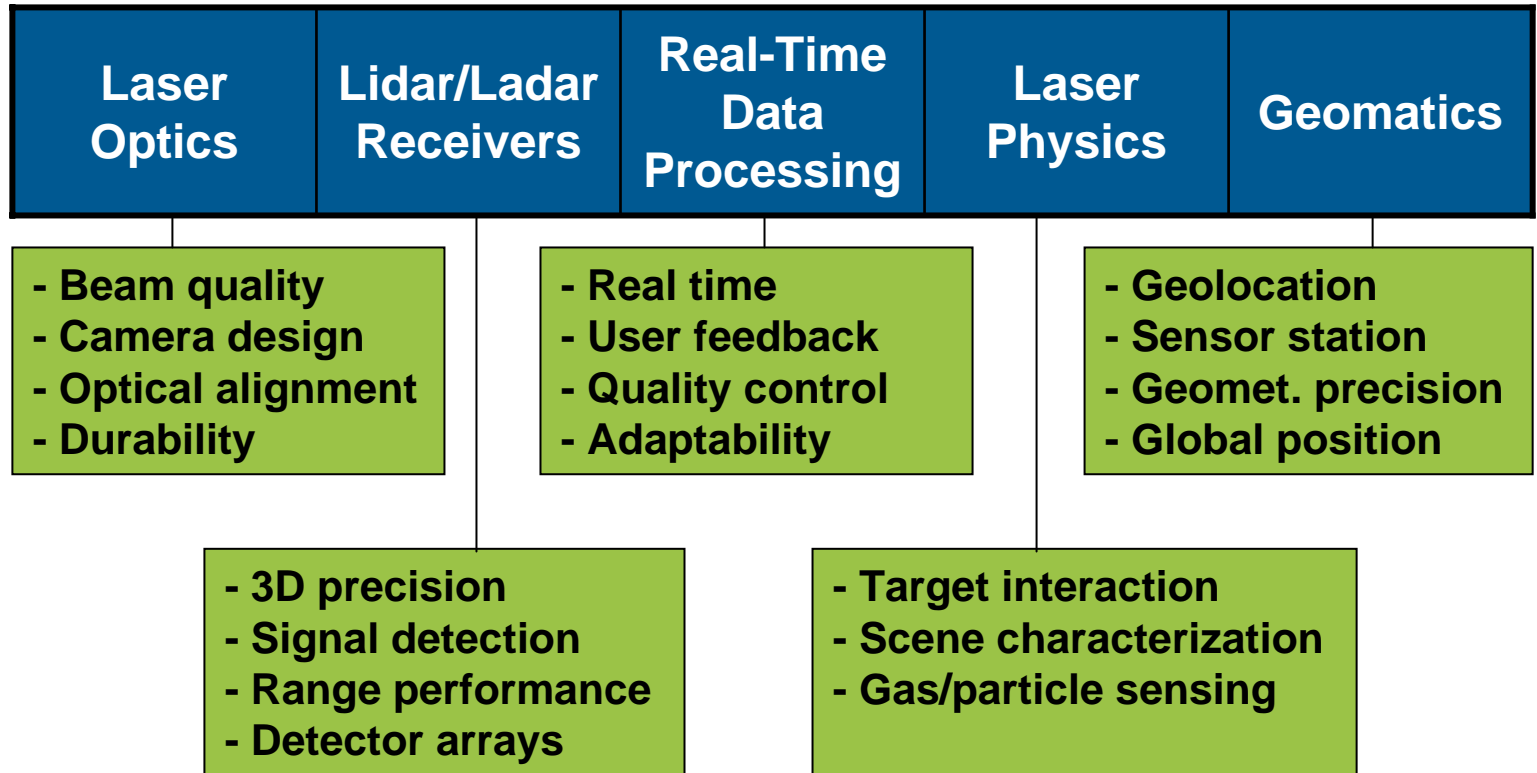


## Worldwide demand is increasing for:

- Advanced 3D camera technology
- Remote environmental monitoring and regulation
- Real-world 3D data for use in digital games and movies
- Remote surveillance and identification in homeland security
- Aerospace instrumentation for situational awareness
- Precision targeting in military defense



# USTAR Hires Needed



Enables greater innovation, productivity and quality



# Commercial Opportunities



- **Engineering**
  - 3D Surveying Cameras (4 product classes)\*\*
- **Agriculture**
  - Portable Agricultural Emission Lidars\*
- **Defense**
  - Laser Radar Missile Seeker Heads\*
  - Gas Cloud Tracking Hyperspectral Lidar
- **Environmental**
  - Atmospheric Wind Lidars
- **Homeland Security**
  - Advanced 3D Airborne Surveillance Cameras\*
  - Harbor Surveillance Cameras\*
- **Aircraft Avionics**
  - Airborne Obstacle Avoidance Sensors
- **Entertainment**
  - Interactive 3D Gaming Cameras
  - Live 3D Video Cameras for TV Studios
- **Transportation**
  - Automotive Sensors \*

# Bio Innovations Research Institute (BIRI)

Preliminary concept





# Bio Innovations Research Institute (BIRI)

## Pre-Groundbreaking Costs

|                                   |                    |
|-----------------------------------|--------------------|
| Programming costs                 | \$600,000          |
| Design Fee                        | \$3,000,000        |
| DFCM Project Management           | \$600,000          |
| <hr/>                             |                    |
| <b>Total requested in FY 2007</b> | <b>\$4,200,000</b> |



# Review & Initial USU FY07 Authorization Requests

|                                                    |                 |
|----------------------------------------------------|-----------------|
| Continue funding existing USTAR hires              | \$1.20 M        |
| Immediately begin recruiting in:                   |                 |
| –Biofuels                                          | \$2.50 M        |
| –Directed Sensors                                  | <u>\$0.96 M</u> |
| Current FY '07 Programs Request**                  | <b>\$4.66 M</b> |
| <br>                                               |                 |
| Draw down funds to begin BIRI Building programming | <b>\$4.20 M</b> |

**\*\*In next few Governing Board Meetings, additional proposals will be made to fully utilize the 2007 budget of \$6 M.**