Economic Development

Overview
Utah's economic development efforts were restructured in 2005 to correspond with a renewed focus on economic development articulated by Governor Jon Huntsman. This resulted in the establishment and consolidation of the Governor's Office of Economic Development (GOED), Utah's Economic Cluster Initiative, a revamped Centers of Excellence, and the Utah Science, Technology and Research (USTAR) initiative.

2006 Overview
2006 marked the first full year during which the Governor's Office of Economic Development operated as part of the Office of the Governor. The creation of what is now GOED was first proposed as part of the Economic Revitalization Plan supported by Governor Huntsman. Part of this plan was realized when the Legislature passed HB 318 in the 2005 General Session. HB 318 dissolved the Department of Community and Economic Development by placing the Division of Business and Economic Development and the Division of Travel Development under the direct control of the Governor in GOED. The remaining functions of DCED were assumed by the newly-created Department of Community and Culture.

With economic development under the direct oversight of the Governor, GOED has now positioned itself to implement the Economic Revitalization Plan within the state. In 2006, GOED began implementing the business development programs and initiatives of the state. Some of these programs and initiatives include: the Centers of Excellence program, the Economic Clusters Initiative, and USTAR.

Centers of Excellence
Program Creation and Overview. The Centers of Excellence program is a state-sponsored program created in 1986 to help fund the process of moving the most innovative research with commercial application from Utah's universities to businesses to create great jobs for Utahns. The program funds university research with promising commercial application by helping each COE develop a sound business plan and develop relationships with seasoned business people and potential licensees (existing businesses) that are interested in the market potential of the specific technology. Among the companies formed out of center-conducted research are: Myriad Genetics, Sonic Innovations, Theratech (acquired by Watson Pharmeceuticals), Echelon Biosciences, Inc., Sarcos, Sentrix Surgical, Inc., Aculus, RapidMapper, MegaStir Technologies, Inc., and TechniScan Medical Systems.

The Bureau of Economic and Business Research at the University of Utah completed a review of the COE program. It noted:

- Over the past 20 years, the Legislature has provided $49.4 million in funding for the COE program. Almost $47 million has gone into direct funding for 110 Centers located at universities throughout Utah.

- State monies committed to the COE program have resulted in economic growth for the state in the form of new companies, additional jobs, and earnings. Since 1986, the program has produced 185 spin-off companies, of which 66 are still active. The remaining companies employ between 1,500 and 1,800 people.

- A total of 170 patents have been issued for technologies developed through the program. Individual centers have entered into 204 licensing agreements. Total matching funds used to leverage the state's commitment total $407.2 million, for a matching rate of about 8.7:1.

The COE program continues to support innovative research in the state and the benefits of COE are readily apparent. COE-funded research at the University of Utah produced technology for a safe, nontoxic and rapid treatment for head lice. The treatment has a high success rate and is important since head lice is a multi-billion dollar, increasingly-resistant problem that affects some 25% of children by the time they are teenagers.

Short-Term Outlook. In FY 2007, the COE program announced funding for 16 research centers, out of 38 proposals for funding. Five COEs were assigned business teams to assist with commercialization efforts and two "spinout companies"--companies who have already commercialized technology developed at Utah universities--received COE funds. In keeping with the state's overall economic revitalization plan, COE will focus resources on economic clusters already identified as areas where Utah can excel in producing innovative research capable of generating viable companies, with the attendant jobs.

Economic Clusters Initiative
Program Overview. Economic clusters are groups of related businesses and organizations within industry sectors whose collective excellence, collaboration, and knowledge provide a sustainable competitive advantage. Using best practices, Utah is capitalizing on its core strengths and facilitating the development of clustered business environments to accelerate growth.

State leaders established the Economic Clusters Initiative to align resources, infrastructure, and policies that contribute to successful economic clusters. Strong economic clusters translate directly into tangible benefits for Utah's businesses, citizens, and educational institutions. Clusters have several bene-

fits. Businesses have instant access to experienced workforce and suppliers, customized services, and critical business resources. Related businesses can work together to achieve new economies of scale, develop new and larger distribution channels, and realize increased profitability. Universities can tap into new research funds and a larger pool of potential students. The net effect is that these factors combine to create higher paying jobs, strengthen education, and raise the standard of living in Utah. The key is to align industry, research universities, capital, talent, technology, and government around industry sectors that possess the greatest synergistic opportunities.

Clusters work best within industry sectors whose collective excellence, collaboration and knowledge base provide a sustainable competitive advantage. Utah will initially focus on economic clusters with key areas of core competencies that are identified as emerging or mature sectors. The include: life sciences, software development and information technology, aerospace, financial services, energy and natural resources, defense and homeland security, and competitive accelerators. Many of the clusters chosen already have the seeds of a commercial and academic base outside of the Wasatch Front and will impact every corner of the state.

Advances are already being made in cluster-focused industries. Utah participated at the Air Force and Army Annual Conferences, where, in participation with Hill AFB and the Utah Defense Alliance, Utah's composite and unmanned system endeavors were showcased. With significant resources already invested in Utah, Hexcel announced that it would expand it carbon fiber facilities in Utah.

In addition, life science research continues to expand in the state. Commenting on the connection between Utah and the discovery of molecular "biomarkers", Michael Paul of LineaGen Research Corporation said: "Both our responsiveness to medications and risk of side effects will depend on our genetic makeup, and there's no other place in the United States that you can understand the genetic structure of the population. So, Utah has a sustainable competitive advantage in this area," Paul continued--"We have an integrated personalized medicine content platform--genealogy-based population records, the Utah Population Database, comprehensive medical records--linked to the types of clinics that [Dr.] Kevin [Flanigan, a neurologist and adjunct associate professor of human genetics at the University of Utah's Eccles Institute of Human Genetics] runs, these patient-oriented research clinics. This is really an unmatched platform for biomarker discovery."

Short-Term Outlook. Evidence of the importance of Utah's clusters already exists, including the expansion of Cyberkinetics, MPRI's driver training contract, and the creation of Rocky Mountain Testing Solutions. All these firms exist in Utah because their respective clusters nurtured their growth with talent and access to capital and markets. The Clusters Initiative will continue to play a key role in economic development by acting as a focus for the state's resources. Research conducted at state universities will also benefit because funding through the COE programs may be coordinated to overlap with key sectors identified by the Clusters Initiative as areas where Utah can excel.

USTAR

Program overview. The Utah Science Technology and Research Initiative economic development initiative is aimed at leveraging the proven success of Utah's research universities in creating and commercializing innovative technologies to create more technology-based start-up firms in Utah and more high-paying job opportunities in Utah.

In spite of these far-sighted measures, the true genesis for the USTAR program was in the 1960s when the federal government determined it no longer needed the land surrounding Fort Douglas east of downtown and prepared to give the land to the state. Thirty-three different proposals to use this newly-available land were submitted. Ultimately, state leaders determined that its best use would be as home to companies that would start as a result of research conducted at the University of Utah. Research Park, as the land would be known, became home to such companies as Evans & Sutherland, ARUP, and Myriad Genetics. Though not located in Research Park directly, other companies like Novell, WordPerfect and Iomega were also created as a result of research conducted at Utah universities. By 2005, 60 companies have been developed through Research Park. Of those, 44 are currently housed at the park, with 37 academic departments and approximately 6,300 employees in 35 buildings. Companies developed out of this university-business partnership created over 4,700 jobs and contribute over $600 million annually to Utah's economy.

The benefits are not confined to Salt Lake City. Recognizing the research that was done adjacent to the University of Utah, state leaders also created the USU Innovation Campus. In a similar arrangement to what was done further south, research conducted at Utah State University in Logan has resulted in the creation of over 60 companies, including Hyclone Laboratories, Campbell Scientific, and Wescor. Companies created from USU-related research have generated over 2,000 jobs and add $430 million in taxable revenues.

In an attempt to restart and refocus state resources on the same formula which was so successful in generating jobs before, the Legislature passed SB 192 in 2005. SB 192 appropriated $7.35 million in initial funding to purchase equipment and supplies and hire research teams at the University of Utah and Utah State University. These monies were also to be used to plan and prepare for a high technology development initia-

tive-which would become USTAR. In 2006, the Legislature took the next step by formally establishing the USTAR Authority. USTAR's mission and organization were defined, and the Legislature took the additional step of appropriating monies to build new facilities where USTAR-related research would be conducted.

USTAR Organization. SB 76 created the framework under which USTAR would function. Under that bill, USTAR would be governed by an oversight board that would direct the expenditure of USTAR funds, review and assess research to be funded by USTAR, and provide accountability to the governor and Legislature for the spending of funds. To ensure that USTAR benefits reached statewide, the board would oversee Technology Outreach Centers where research would occur beyond the primary research centers around the University of Utah and Utah State University. USTAR would also receive appropriations from the state to be used in recruiting teams to Utah to conduct cutting-edge research. USTAR also would fund construction of facilities to house these teams that were sufficient to provide access to the latest equipment.

Short-Term Outlook. The Governing Authority was formed in July 2006, and selected an Executive Director in September of the same year.

The two research universities have formed interdisciplinary teams to refine proposals and research directions. Initial areas of focus at Utah State University are biofuels, directed energy sensor technology, advanced nutrition/obesity, and semiconductor chips/wireless sensors. Initiatives at the University of Utah include diagnostic imaging, personalized medicine, circuits of the brain, imaging technology, nano-technology biosensors, IT networks and memory, biomedical device innovation, and fossil energy.

In addition to the research efforts at the universities, USTAR identified locations around the state where Technology Outreach Centers will be located. In making these selections, the Board made selections that distributed the centers around the state. Currently, the designated locations include:

- Southern Utah in Cedar City or St. George working with Southern Utah University and Dixie State College;
- Provo/Orem working with Utah Valley State College;
- Southern Salt Lake County working with Salt Lake Community College at the Larry Miller Entrepreneurial Center;
- Ogden and Weber County working with Weber State University; and
- Uintah Basin - either Roosevelt or Vernal, working with USU's extension campus.

2007 Outlook

A reorganized GOED, the Clusters Initiative Program, revamping Centers of Excellence, and USTAR are the tools the state will use to accelerate economic development. In addition, the state focus on international development will continue to grow, following up on the trade mission led by Governor Huntsman to China in Fall 2006. Building on existing competitive advantage in certain core competencies, such as life science and information, Utah hopes to create more high paying jobs and sustain our high quality of life.

Table 12
Identified Industries for Utah Economic Clusters Initiative

Life Sciences	Software Development & Information Technology	Aerospace	Defense and Homeland Security	Financial Services	Energy and Natural Resources	Competitive Accelerators
• Personalized/predictive medicine - Genetics & biomarker development - Pharmacutical research & clinical services - Neuroscience • Medical devices & products • Microbe biotechnology • Environmental & agricultural technology & remediation • Cellular systems (nutrition research & infectious diseases)	• Systems management & security • Web services & software applications • Wireless technologies • Digital media & entertainment technology • High-performance computing applications • Simulations, images, modeling & algorithms • GIS mapping & imaging	• Composites & advance materials • Propulsion systems • Communications & avionics	• Smart sensors & chemical/biological detection • Autonomous systems	• Industrial banks	• Energy independence • Mining & mineral technology • Water management	• Nanotechnology • Advanced manufac-turing • Logistics & distribution centers • Networking infrastructure • Quality of life - Personal wellness & nutraceuticals - Family related products - Outdoor recreation

Source: Governor's Office of Economic Development

Table 13
Active Centers of Excellence: 2006

Centers of Excellence Program	University	First year Funded	Cluster	Description of Research and Technology
Acoustics Research	Brigham Young University	2005	Software Development & Information Technology	Commercializing active sound control technology with superior ability to both reduce noise in varied settings (vehicle cabins computer fans and telecommunications for example) and modify sounds for commercial benefit
Advanced Communications Technology	Brigham Young University	2004	Software Development & Information Technology	Improved wireless communications and data transmission for both military and commercial markets is achieved through the use of MIMO (multiple-input multiple-output) technology with multiple antenna elements
Advanced Imaging LADAR	Utah State University	2003	Defense & Homeland Security	Commercializing land-based and airborne high-resolution laser-based 3-D color-imaging platforms for both military and civilian use
Advanced Thermal Management Technologies	Utah State University	2006	Competitive Accelerators	Technologies for extremely high-performance thermal management in the context of physical and vibration isolation in part from collaboration with USU's Space Dynamics Lab
Biomedical Microfluidics	University of Utah	2004	Life Sciences	Products from engineering technology that controls the movement of fluids in channels smaller than a human hair micropumps that can deliver tiny quantities of drugs and improved devices for DNA screening
Control of Flows in Manufacturing	Utah State University	2006	Competitive Accelerators	Applying computational fluid dynamics to improve manufacturing processes including particle sorting and electrical discharge machining
Functionally Graded & Designed Cemented Tungsten Carbide & Polycrystalline Diamond Composite Materials	University of Utah	2006	Competitive Accelerators	Advanced composite materials with predictable wear and failure characteristics designed for demanding applications such as mining drilling and grinding
Homogeneous DNA Analysis	University of Utah	2003	Life Sciences	Developing a simple and inexpensive method for genotyping DNA samples from patients or disease organisms in a doctor's office
Interactive Ray-Tracing and Photo-Realistic Visualization	University of Utah	2005	Software Development & Information Technology	Producing a commercial form of two programs that can process 3-D graphics based on large data sets found in CAD film animation and scientific models which existing GPUs cannot handle
Microarray Technology	University of Utah	2005	Life Sciences	Developing a superior microarray platform for the molecular diagnostics and research markets with improved sensitivity specificity and throughput.
Miniature Unmanned Air Vehicles	Brigham Young University	2004	Aerospace	Rapid design of airframes and miniaturized autopilot and guidance systems for tiny UAVs that can be operated by novices have earned the attention of both military and civilian agencies.
Modified Activated Carbons Technology	University of Utah	2005	Energy & Natural Resources	Developing improved products for gas and water treatment as well as metal recovery or removal based on modifications to granular activated carbon.
Nanosize Inorganic Material Powders	University of Utah	2004	Competitive Accelerators	Commercializing a cost-effective process (molecular decomposition) for the manufacturing of nanosize powders-the building blocks for myriad nanotechnology applications as well as nanostructured ceramic membranes and other devices.
Organic Electronics	University of Utah	2006	Software Development & Information Technology	Development of new polymers for the creation of organic light emitting diodes resulting in the commercialization of organic semiconductors with superior luminescence efficiency and color spread for multicolor displays and white light illumination
Therapeutic Biomaterials	University of Utah	2004	Life Sciences	Developing applications of biopolymers and hydrogels for clinical use in wound repair prevention of surgical adhesions and extending the life of donated organs.
Titanium Boride Surface Hardening	University of Utah	2003	Competitive Accelerators	Commercializing harder longer-lived components and devices — ranging from armor to bearings and orthopedic implants — for the military biomedical and industrial markets

Source: Governor's Office of Economic Development

Table 14
Successful Companies Connected with the Centers of Excellence: 2006

Cluster	Center	# Spin Outs	Company	Employment	Payroll	Average Wage
Aerospace	Miniature Unmanned Air vehicle	2	Flying Sensors; Procerus Technologies	6	$520,002	$86,667
Competetive Accelerators	Advanced Composites Manufacturing & Engineering	1	Rocky Mountain Composites	85	$2,975,000	$35,000
Competetive Accelerators	Advanced Joining of Materials	1	Megastir	5	na	na
Competetive Accelerators	Advanced Structural Composites	1	IsoTruss	2	$80,000	$40,000
Competetive Accelerators	Chemical Separation	1	IBC Advanced Technologies*	19	na	na
Competetive Accelerators	Computational Design and Testing	1	Visco**	0	$0	$0
Competetive Accelerators	Computer Aided Engineering, Design and Mfg	2	CIMETRIX; PROMODEL Co.	90	$6,300,000	$70,000
Competetive Accelerators	Direct Machining & Control	1	Direct Controls	5	$425,000	$85,000
Competetive Accelerators	Engineering Design	1	Sarcos Medical Corporation*	49	na	na
Competetive Accelerators	Raman Technology	1	Process Instruments	15	$1,125,000	$75,000
Defense and Homeland Security	Self-Organizing Intelligent Systems	2	Autonomous Solutions, Inc.; Visionary Products	89	$2,245,000	$45,000
Defense and Homeland Security	Smart Sensors	2	Live Wire, RF Innovations	8	na	na
Energy and Natural Resouirces	Modified Activated Carbons Technology	1	Other***	5	na	na
Information Technology	3D Computer Gaphics	1	Infowest*	19	na	na
Information Technology	Computer Based Education	1	Cali, Inc.	45	$2,700,000	$60,000
Information Technology	Computer Graphics & Scientific Visualization	1	Engineering and Geometry Systems	35	$3,500,000	$100,000
Information Technology	CROMDI Multi-Dimensional Information	1	Applied Medical Visualization	4	$400,000	$100,000
Information Technology	Design Systems	2	ErgoWeb, Part.Net	39	$2,865,018	$73,462
Information Technology	Electronic Medical Education	2	Amirsys, Visual Share	34	$1,554,004	$45,706
Information Technology	High Speed Information Processing	1	SP Communications**	0	$0	$0
Information Technology	Industrial Imaging	1	GeoChem Metrix, Inc.	2	$80,000	$40,000
Information Technology	Inverse Problems, Imaging and Tomography	1	TechniScan	15	$1,275,000	$85,000
Information Technology	Scientific Computing & Imaging	1	Visual Influences, Inc.	5	$300,000	$60,000
Life Sciences	Alternate Strategies for Parasite Removel	1	LouseBuster	1	na	na
Life Sciences	Artificial Hearts and Biomedical Devices	2	Medquest Products; Utah Artificial Heart Institute	52	$4,160,000	$80,000
Life Sciences	Biomedical Microfluidics	1	Wasatch Microfluidics	4	$160,000	$40,000
Life Sciences	Bioremediation	1	Applied Biosciences Corp.	9	$450,000	$50,000
Life Sciences	Biotechnology	1	Intech 180 Corp.	1	na	na
Life Sciences	Cancer Genetic Epidemiology	1	Myriad Genetics	760	$44,080,000	$58,000
Life Sciences	Cell Signaling	1	Echelon Research Laboratories	25	$1,125,000	$45,000
Life Sciences	Controlled Chemical Delivery	1	MacroMed*	49	na	na
Life Sciences	Design of Molecular Function - Environmental	1	MicroBioSystems	4	$240,000	$60,000
Life Sciences	Genome Technologies	1	Cimmeron Software	8	$800,000	$100,000
Life Sciences	Microarray Technology	1	Philotek**	0	$0	$0
Life Sciences	Neural Interfaces	1	Bionic Technologies*	22	na	na
Life Sciences	Nuclear, Medical, and Environmental Technology	1	Nuclear Labyrinth**	0	$0	$0
Life Sciences	Rapid Microbe Detection	1	Finite Technologies**	0	$0	$0
Life Sciences	Signal Processing	1	Sonic Innovations*	249	na	na
Life Sciences	Therapeutic Biomaterials	2	Glycosan Bio, Sentrx Animal Care**	2	na	na
Life Sciences	X-Ray Imaging	1	MOXTEK	138	$4,968,000	$36,000
Natural Resources	Advanced Combustion Engineering Research	2	Combustion Resources; Reaction Engineering Intl	34	$3,020,016	$88,824
Natural Resources	Minerals Technology	2	Milltech engineering; Minerals Technology, Inc.	4	na	na
Natural Resources	Profitable Use of Agricultural Byproducts	1	Andigen	5	$375,000	$75,000
Natural Resources	Solid Oxide Fuel Cell	2	Materials and Systems Research, Inc.; Versa Power System	60	$4,000,020	$66,667
	Total	55	Total	2,003	$89,722,060	$65,455

* Employee data reported by DWS (http://jobs.utah.gov/firmfind/pgSfirm.asp), upper limit of range used, per consistency with known values.
** In startup mode, no data reported yet
*** Company confidential

Source: Governor's Office of Economic Development