Preparing for the Future:

Utah's Science, Technology, Talent and Innovation Plan

Prepared for: Governor's Office of Economic Development
Utah System of Higher Education

Prepared by: Battelle Technology Partnership Practice

Spring 2012

Executive Summary

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THE BALANCE OF THE REPORT IS AVAIABLE AT WWW.UTAH.GOV/USTAR/DOCUMENTS.207.PDF

GARY R. HERBERT
GOVERNOR

STATE OF UTAH
OFFICE OF THE GOVERNOR

GREG BELL
LIEUTENANT GOVERNOR

October 17, 2012

Dear Fellow Utahns,

Throughout my administration, my vision for Utah has remained clear: Utah will lead the nation as the best performing economy, and be recognized as a premier global business destination. I am thrilled to say our hard work is paying off.

Thanks to a robust public/private partnership, Utah continues to thrive. Our economy is being driven by innovation and spirited entrepreneurship, particularly in the arenas of science and technology. As a result, Utah is outpacing the nation in several key economic metrics.

We have long recognized that continued growth begins with education. By emphasizing Science, Technology, Engineering and Mathematics (STEM) education and working with the Utah System of Higher Education, and through our Utah Cluster Acceleration Project (UCAP), we can anticipate the workforce needed to meet the demands of an increasingly competitive global marketplace.

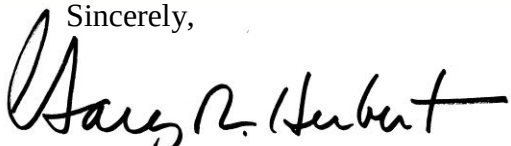
Utah's economic development plan recognizes the importance of creating an environment that fosters innovation and provides support to entrepreneurs and emerging companies.

But we can do more.

The *Science, Technology, Talent and Innovation (STI) Strategic Assessment and Growth Initiatives Plan* identifies opportunities to accelerate the state's technology-based industry clusters that have elevated Utah as a leader in today's global innovation economy. At its core, the *STI Plan* seeks to deepen the collaboration among higher education, industry, and government to help ensure that a coordinated strategy is in place to prepare our future workforce.

I encourage you to become familiar with, and use, the STI strategic plan to help focus our future investment so that we may all benefit from Utah's vibrant, growing, and sustainable economy.

Sincerely,



Gary R. Herbert.
Governor

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Executive Summary

Utah has been hard at work to make economic development a top priority. As Governor Herbert stated in his State of the State address this past January:
"*My vision for economic development is Utah will lead the nation as the best performing economy and be recognized as a premier global business location*."

While Utah is noted for its well-performing economy, it did decline along with the U.S. in the recent recession and continues to face the challenges of stiff global competition. Indeed, the U.S. as a whole faces challenges given the relentless advances being achieved in many developing countries in science, technology, education and innovation.

In response to this rapidly growing global economy and the need to accelerate Utah's rebound from the deep recession of 2007–2009, Governor Herbert set out in 2010 a comprehensive plan for growing Utah's economy in response to this rapidly growing global economy. It has four objectives:

- Strengthen and grow existing Utah businesses, both urban and rural
- Increase innovation, entrepreneurship and investment
- Increase national and international business
- Prioritize education to develop the workforce of the future.

Critical to achieving the four objectives of the Governor's Economic Development Strategy is having in place an effective science, technology and innovation plan that ties closely to talent development, industry clusters and the demands of global competition. In particular, the Governor's plan recognizes the importance of creating an environment that fosters innovation and provides support to entrepreneurs and emerging companies. The plan also called for connecting higher education, industry and government to identify industry workforce needs and ensure plans are in place that will deliver a trained and ready workforce for the future.

The Governor's Strategy also recognized the importance of maintaining the state's infrastructure, business climate and quality of life, all factors that influence business location decisions. In particular, Utah must continue to fund transportation infrastructure projects, expand broadband access, and maintain its business friendly regulatory environment. Given the state's rapid growth, attention must be given to its natural resources, including air quality and the availability of water to meet the needs of both residences and businesses. Because it is critical to economic growth, this plan addresses water sustainability in addition to technology economic development.

This Science, Technology, Talent and Innovation (STI) Strategic Assessment and Growth Initiatives Plan was sponsored by the Governor's Office of Economic Development (GOED) and the Utah System of Higher Education (USHE) to identify initiatives that may be taken to continue to grow the state's technology-based industry clusters and make Utah a leader in today's global innovation economy. Partial funding support for this effort came from a planning grant from the U.S. National Science Foundation EPSCoR program. To this end, this STI Strategic Plan:

- Evaluates the competitive position of Utah's technology-based economy
- Identifies areas in which Utah has strengths that offer opportunities for future growth
- Identifies challenges that need to be addressed to continue to grow the state's technology-based economy
- Assesses the state's overall science, technology, talent and innovation infrastructure
- Proposes initiatives that could be undertaken to realize the full potential of Utah's innovation economy
- Addresses the potential economic growth-limiting issue of water sustainability

To assist in this effort, the Battelle Technology Partnership Practice (TPP) was selected to conduct the analysis and to assist in crafting a strategic plan of action with concrete initiatives based on best practice lessons. Battelle TPP is the economic development consulting arm of the world's largest independent non-profit research and development organization. Battelle TPP brings to this project a position as the national leader in advanced, technology-based and cluster-driven economic development practice with an established track record in developing and advising many of the most successful modern development programs in the U.S.

Key Findings on Utah's Technology-based Industry Clusters Performance and Linkages with Core Technology Competencies Found in Utah

All states and regions of the nation need to foster globally competitive industry drivers given the economic forces shaping the 21st century. As the National Governor's Association explains:

> "U.S. economic strength depends on the ability of each state to "compete" successfully in the world marketplace. Each state must exploit the unique advantages it has relative to other states and build on the strengths found in its local "clusters of innovation"—distinct groups of competing and cooperating companies, suppliers, service providers and research institutions."[1]

Utah has been diligent in having its economic development efforts guided by a focus on advancing industry clusters around areas of strengths and to map both existing and emerging industry strengths to growth drivers of the national and global economy. Governor Herbert's Economic Development Plan for Utah continues to embrace the importance of building upon Utah's industry clusters: "The key is to bring industry, talent, government, universities, technology and capital together around industry sectors that possess the greatest opportunity for success. Their collective excellence allows all companies within the cluster to grow and thrive, resulting in increases in the standard of living within a region."[2]

Among Utah's identified industry clusters, several represent technology based industries, including:

- Aerospace & Defense
- Energy & Natural Resources
- Information Technology
- Life Sciences/Biomedical (not including hospitals)

[1] National Governor's Association, "A Governor's Guide to Trade and Global Competitiveness," 2002

[2] Governor Herbert, Utah's Economic Development Plan for Utah, 2010, page 13

The analysis of Utah's technology industry clusters in the STI Plan takes a broad view of Utah's technology-based industry clusters considering both their economic performance in recent years as well as the presence and alignment with core technology competencies found in Utah. From a state economic development perspective, core technology competencies can be identified where there is a "critical mass" of expertise and activities across product development and productivity in industry as well as research activities in universities, hospitals and non-profit research centers. By linking core competencies to industry clusters, it is possible for a state to identify how to position an existing industry cluster for future development and to identify the potential for advancing emerging industry clusters.

Overall, Utah's Economic Cluster Initiative continues to reflect very well the specific technology-based industry strengths found in Utah. Of the nearly 117,000 jobs found in technology-based industries in Utah using the BLS definition of high technology industries, nearly 60 percent were found in the four existing industry clusters of Aerospace & Defense, Energy & Natural Resources, Information Technology and Life Sciences. The few significant technology-based industries not specifically included in the existing Utah Economic Cluster Initiative included broad-based activities in administrative services industries found in Utah which support both technology headquartered firms in Utah as well as non-technology headquartered firms, as well as technical services industries that largely support the Energy and Natural Resources Cluster.

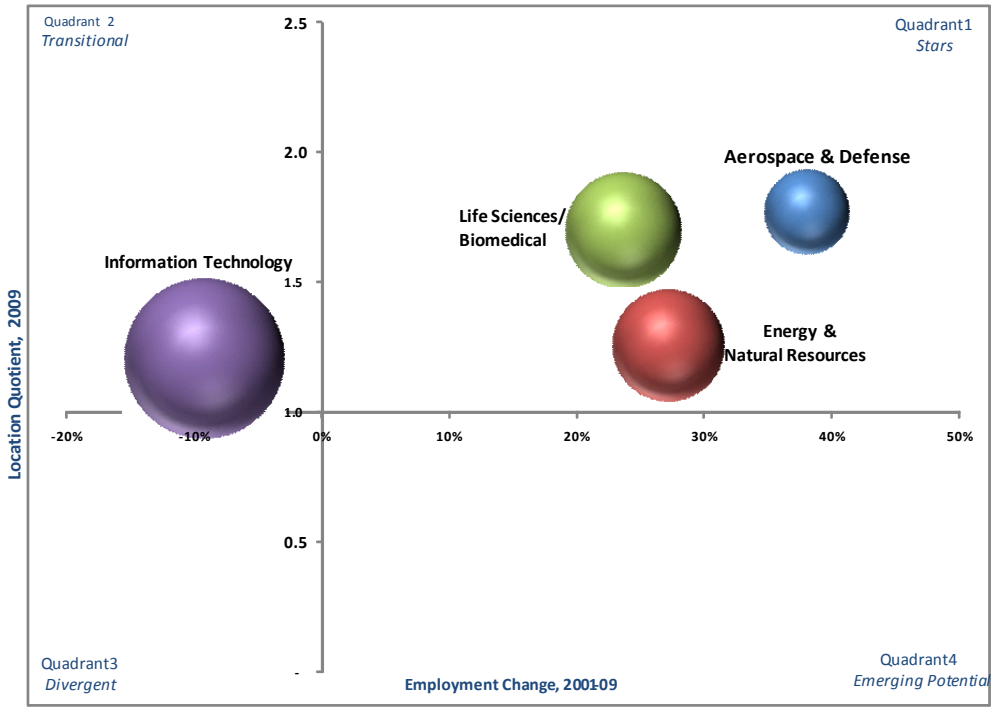
In economic performance, the four technology-based industry clusters found in Utah stand as either current or specialized industry strengths. Current strengths refer to those industry clusters that have a substantially higher relative level of concentration of employment than found at the national level (20 percent or higher) and are growing in jobs. Specialized industry clusters are those that are not growing in jobs, but remain substantially above the concentration of jobs found in the nation.

The results for Utah were very positive:

- Three industry clusters—Aerospace & Defense, Energy & Natural Resources and Life Sciences/Biomedical—stand as current strengths.
- One industry cluster—Information Technology—stands as a specialized strength.

A good way to visualize this economic performance is through the use of "bubble" charts that present in one graphic higher or lower concentration levels along the vertical axis, job growth or decline along the horizontal axis and size of employment in 2009 by the size of the bubble. See Figure ES-1.

Figure ES-1: Bubble Chart of the Economic Performance of Utah's Technology-based Industry Clusters

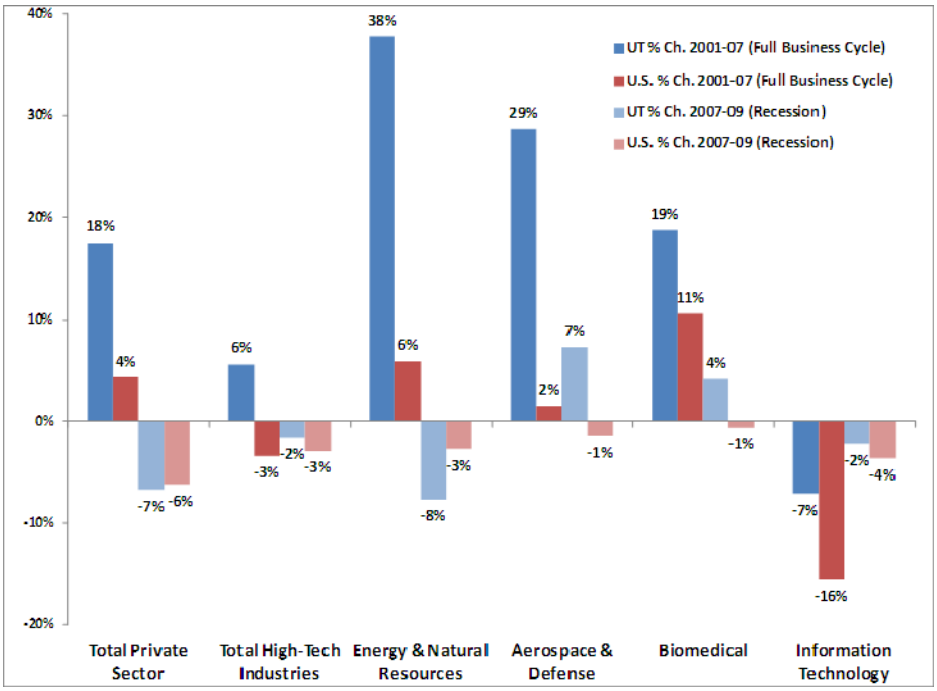


Source: Battelle analysis of Bureau of Labor Statistics, QCEW data; enhanced file from IMPLAN.

Utah has also been performing well in the growth of its technology-based industry clusters relative to the nation. This measure of regional trends examines whether a local industry cluster is gaining or losing competitive share compared to the nation. Figure ES-2 presents how well Utah's technology-based industry clusters have performed compared to the nation over the last full business cycle from 2001 to 2007 and the recent recession years of 2007 to 2009. As a benchmark we also consider overall private sector employment in Utah and total technology-based industries. Three key findings emerge:

- Over the last full business cycle years of 2001 to 2007, each of the technology-based industry clusters in Utah outpaced the performance of similar U.S. industries.
- While Utah's overall economy well outpaced the nation over the last full business cycle years of 2001 to 2007 in both total private sector employment and total technology-based industries, during the recent recession, Utah declined along with the nation at comparable levels.
- During the recession years, two technology-based industry clusters in Utah—Aerospace & Defense and Life Sciences/Biomedical—continued to make gains that outpaced the nation.

Figure ES-2 Recent Employment Trends for Utah's Technology-based Industry Clusters, Total Private Sector and Total Technology Industries Compared to the U.S. for 2001 to 2007 Period and 2007 to 2009 Period



Source: Battelle analysis of Bureau of Labor Statistics, QCEW data; enhanced file from IMPLAN.

There is a broad range of patent and publication cluster focus areas found across Utah's industry and university base with a strong alignment to Utah's technology-based industry clusters. A cluster analysis of the abstracts of over 20,000 patents and publications generated in Utah from 2006 through mid-year of 2011 identified 39 cluster focus areas. This cluster analysis uses a proprietary software tool to identify groupings based on the use of words in the text of the abstracts to identify logical groupings without an "*a priori*" bias, unlike standard analyses of publications, research trends, and reputational rankings for which the research field categories are predetermined by the entities collecting the data. Battelle then validated these patent and publication cluster focus areas through interviews with university officials, faculty leaders and corporate executives.

Battelle was able to map nearly all of these patent and publication cluster focus areas to the technology-based industry clusters found in Utah. Table ES-1 shows the mapping of the patent and publication cluster focus areas to the technology-based industry clusters in Utah. The only patent and publication cluster focus areas not mapped to technology-based industry clusters were in transportation vehicle components, manufacturing process engineering and polymer-based applications that spanned across many industry uses—together these three unmapped patent and publication cluster focus areas represented 976 patent and publication records, or less than 5 percent of the total.

Battelle then validated these patent and publication cluster focus areas from interviews with industry and university leadership and determined how they could best be grouped into broader core technology competencies reflecting further analysis on the presence of major research centers, leading publication fields, areas of strength in technology deployment and presence of innovative, emerging companies.

Battelle was able to identify a wide range of potential growth opportunities for Utah across its technology-based industry clusters using a line of sight analysis from detailed industry strengths to core technology competencies. This line of sight analysis to identifying potential growth opportunity areas for Utah was informed by interviews with industry executives and university leadership as well as incorporating the findings from many existing state level strategic reports developed in concert with industry, such as Utah Cluster Acceleration Strategies in Energy, Digital Media and Aerospace & Defense as well as Utah's 10 Year Strategic Energy Plan.

By linking core technology competencies to specific industry strengths within an overall industry cluster, it is possible to define not only where a state has demonstrated the ability to advance industry development but where it has the know how to continue to fuel innovation and further distinct areas of growth as set out in Figure ES-2.

Table ES-1: Mapping of Patent and Publication Cluster Focus Areas in Utah into Utah Technology-Based Industry Clusters

Aerospace & Defense	1236	o	Automation & Control
		o	Sensor and Sensor Systems
		o	Aerospace-related Materials
		o	Space Sciences
Energy & Natural Resources	3141	o	Oil, Gas and Resource Mining Tools
		o	Energy Conversion and Storage
		o	Water and Soil Conservation
		o	Atmospheric Sciences
		o	Earth Science
		o	Ecology
		o	Range and Forest Sciences
		o	Animal Health and Sustainability
Information Technology	3076	o	Networking
		o	Information and Data Systems Management
		o	Semiconductor and Solid-State Devices
		o	Image Processing
		o	Optical Sciences
		o	E-Commerce
		o	Signal Processing
		o	Information Security
		o	Communications Processing Technologies
		o	Data Storage and Memory
Life Sciences/ Biomedical	11,677	o	Surgical Devices, Catheters, Instruments, and Equipment
		o	Genomics and Biologics
		o	Neurosciences
		o	Cancer Research and Treatments
		o	Musculoskeletal Implants and Devices
		o	Psychology and Behavioral Research
		o	Cardiovascular and Pulmonary Diseases and Conditions
		o	Drug Development and Delivery
		o	Infectious Diseases, Pathogens and Immunology
		o	Reproductive Medicine
		o	Molecular Genetics and Cell Biology
		o	Medical Imaging
		o	Diabetes
		o	Transplantation and Stem Cell Therapies
		o	Natural Products
		o	Ophthalmology
		o	Ion Channel Research

Figure ES-2: Summary Line of Sight for Technology Based Industry Clusters Aligning Core Technology Competencies to Detailed Industry Strengths to Possible Growth Opportunity Areas

Core Technology Competencies	Detailed Industries That Are Growing in Jobs and/or Specialized in Level of Employment Concentration	Possible Growth Opportunities for the Future
AEROSPACE & DEFENSE INDUSTRY CLUSTER		
Automation and Control Sensors and Sensor Systems Aerospace-related Materials Space Sciences	▪ Guided Missile and Space Vehicle Propulsion Unit and Parts Manufacturing. ▪ Search, Detection, Navigation, Guidance, Aeronautical and Nautical System and Instrument Manufacturing. ▪ Aircraft Parts (not including engines)	Unmanned Aerial Systems Advanced Aerospace Materials
ENERGY & NATURAL RESOURCES INDUSTRY CLUSTER		
Oil, Gas and Resource Mining Tools Energy Conversion and Storage Environment, Ecology, Water and Atmospheric Sciences	▪ Support Activities for Oil and Gas Operations ▪ Bituminous Coal Underground Mining ▪ Petroleum Refineries ▪ Crude Petroleum and Natural Gas Extraction ▪ Fossil Fuel Electric Power Generation ▪ Water and Sewer Line and Related Structures Construction ▪ Hazardous Waste Treatment and Disposal ▪ Environmental Consulting Services ▪ Primary Smelting and Refining of Copper ▪ Copper Ore and Nickel Ore Mining ▪ Primary Smelting and Refining of Nonferrous Metal	Clean Technologies for traditional and unconventional sources of fossil energy Energy storage and power delivery systems
INFORMATION TECHNOLOGY INDUSTRY CLUSTER		
Information Systems Electronics and Processing Technologies	▪ Custom Computer Programming Services ▪ Data Processing, Hosting and Related Services ▪ Software Publishers ▪ Electronic Shopping ▪ Semiconductor and Related Device Manufacturing ▪ Internet Publishing, Broadcasting and Web Search Portals ▪ Computer Systems Design Services ▪ Other Electronic Component Manufacturing ▪ Other Computer Related Services ▪ Cable and Other Subscription Programming ▪ Bare Printed Circuit Board Manufacturing ▪ Audio and Video Equipment Manufacturing	Networked information systems Digital gaming and other digital media
LIFE SCIENCES/BIOMEDICAL INDUSTRY CLUSTER		
Medical Device Disease Research, Drugs and Pharmaceutical Basic Biological Research Natural Products	▪ Pharmaceutical Preparation Manufacturing ▪ Medical Laboratories ▪ Drugs Wholesalers ▪ Irradiation Apparatus Manufacturing ▪ Dental Laboratories ▪ Medicinal and Botanical Manufacturing ▪ Electromedical and Electrotherapeutic Apparatus Manufacturing ▪ Life Sciences Commercial Research & Development ▪ Medical, Dental and Hospital Equipment & Supplies Wholesalers ▪ Surgical Appliance and Supplies Manufacturing ▪ Surgical and Medical Instrument Manufacturing ▪ Dental Equipment and Supplies Manufacturing	Molecular medicine, drug discovery, development and delivery Molecular diagnostics and personalized medicine Natural products and dietary supplements

One area of concern for Utah is the low value-added per employee compared to the U.S. average levels across all of Utah's technology-based industry clusters. Industry technology competencies are more than just advancing new products and processes. Just as critical, if not as widely heralded, is the ability of industry to "put technology to work." To assess Utah's position in technology deployment an analysis of value added output per employee was undertaken to see how well the four technology-based clusters in Utah compare to the U.S. overall. Value added output measures output after subtracting out the cost of inputs to production. Higher value-added per employee suggests more effective deployment of technologies in production as well as an ability to produce more complex, higher-value products. Battelle calculated value added per employee from data on employment and value-added economic output reported for industries in Utah and the U.S. by IMPLAN.

While there are a few detailed industry sectors in which Utah exceeds the U.S. average, the consistency of Utah's lower value-added per employee points to a more significant challenge of how to put technology to work to raise the value added of its industrial production. This can happen through the use of technology to develop more complex, higher valued products or to raise productivity of operations in Utah.

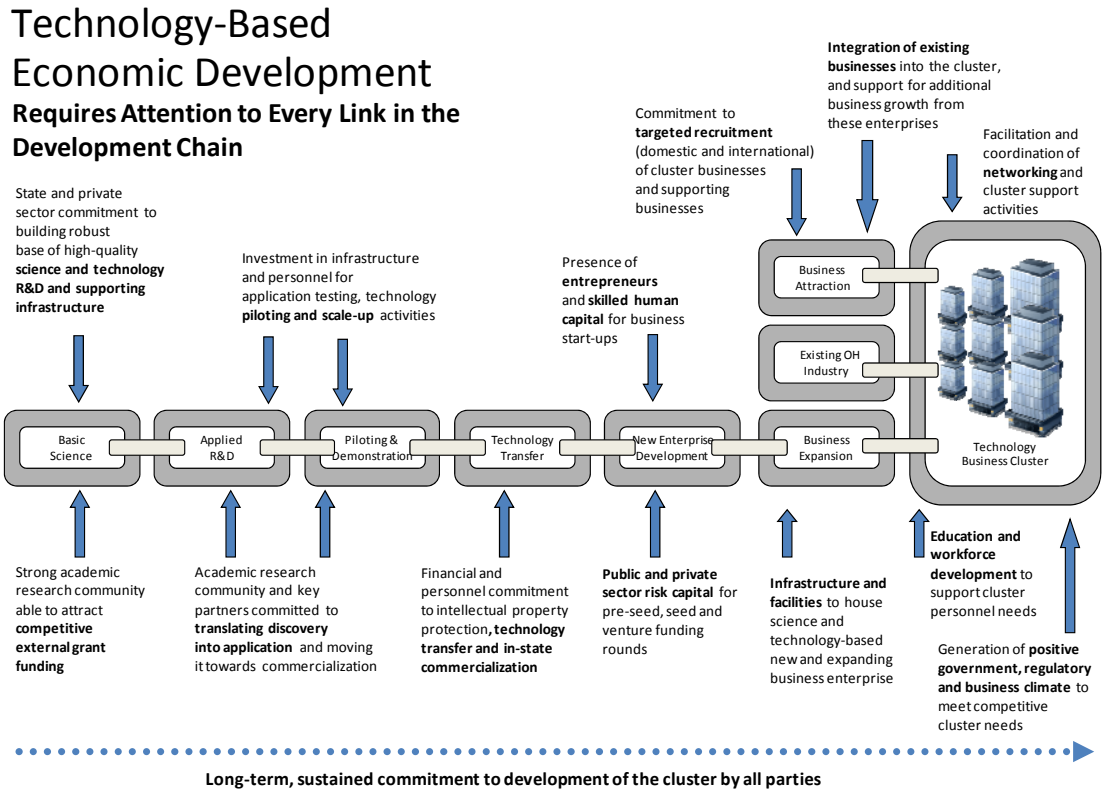
Table ES-3: Value Added Per Employee for Technology Based Industry Cluster: Utah Compared to U.S.

	Utah Value-Added Per Employee	U.S. Value-Added Per Employee	Utah Percentage of U.S. in Value-Added Per Employee
Aerospace & Defense	$129,756	$150,062	87%
Energy & Natural Resources	$293,860	$304,843	96%
Information Technology	$99,458	$147,845	67%
Life Sciences	$106,379	$120,313	88%

Source: Battelle calculations using IMPLAN data.

Recommended Strategic Initiatives to Realize the Full Potential of Utah's Innovation Economy

Economic development is not easy to achieve in general, while technology-based economic development is an even greater challenge. For economic development to occur, an entire interconnected sequence of positive factors has to be in place. For development of technology-based business sectors, the chain of factors is particularly complex and challenging to develop and manage. If any link in the chain in missing, a sustainable technology cluster is unlikely to develop. The graphic below presents an illustration of how to conceive of the linkages found in technology-based economic development.



The states and regions in the U.S. which have achieved success in growing robust technology industry clusters (places such as the San Francisco Bay region and Boston) have well-developed technology development chains in place. These technology-based economic development chains may form naturally over time (as occurred in Silicon Valley), or they may result from dedicated activities of states, regions and key stakeholders to connect and build links in the chain to assure such development happens. The figure above illustrates a basic technology-based economic development chain and the specific links that need to be in place to form and grow a technology cluster.

It is clear that Utah has policies and programs aimed at strengthening many of the links in the chain. A number of initiatives have been put in place to achieve the state's economic development objectives related to science, technology, talent and innovation. Through the Utah Science Technology and Research Initiative (USTAR), Utah has attracted more than 50 research teams to the University of Utah (U of U) and Utah State University (USU). These teams, which are led by world-class innovators, have attracted significant research dollars and initiated collaborations with both industry and other researchers. Utah's three research universities, the U of U, USU and Brigham Young University (BYU), have active and effective technology transfer and commercialization efforts that are creating new companies and bringing new products to the market.

Utah has developed robust technology-based industry clusters in aerospace and defense, energy and natural resources, life sciences, and information technology, among other areas. To continue to support the development of these clusters, the Utah University System of Higher Education (USHE), the Governor's Office of Economic Development(GOED) and the Division of Workforce Services (DWS) joined together to create the Utah Cluster Acceleration Partnerships (UCAP) initiative. The objective of UCAP is to explore ways in which Utah's educational and workforce development institutions can partner with Utah's industry clusters to accelerate their growth. UCAP strategies have been developed or are under development for the aerospace and defense industry cluster, the energy industry cluster, the life sciences industry cluster and the digital media industry cluster and more cluster acceleration strategies are anticipated.

Based on a comprehensive assessment of Utah's position in R&D and technology transfer, talent, capital availability and overall economic infrastructure, a number of specific gaps emerge that need to be addressed if Utah is to accelerate the growth of its technology clusters. These include:

- Insufficient linkages between Utah's industry clusters and its higher education institutions.
- Underdeveloped risk capital markets. Ways must be found to help Utah's large base of start-up companies to grow and succeed in Utah. In particular, Utah's capital markets must be developed to be able to meet companies' capital needs at every stage of their development, but particularly at the proof-of-concept and seed stages.
- Lack of talent to fill senior management and other skilled positions.
- Concern about the quality of STEM education. Utah must take steps to ensure that there is a talent pipeline sufficient to meet industry's need for skilled and educated workers.

Below is an overview of these gaps facing Utah and a set of proposed "initiative" options that the State of Utah can advance to address the gaps identified. Activities that could be undertaken under each initiative are suggested.

Knowledge Initiative – Encourage Greater Industry University Collaboration

Innovation, in and of itself, will not necessarily translate into economic activity. Rather it is the application of that technology and its introduction into the marketplace that results in economic

growth. Having a strong R&D base is necessary but not sufficient to grow a technology-based economy. An effective means of moving technology into the commercial marketplace is to encourage relationships between the researchers who are making the discoveries and the entrepreneurs and company CEOs that have the ability to commercialize them.

Utah has strong technology-based industry clusters and academic R&D strengths in areas that relate to these clusters. But Utah's research base has lagged and few companies report working collaboratively with academic researchers. In fact, a number of the interviewees suggested that it is difficult to work with technology transfer offices to either license technology or to conduct sponsored research. Issues often arise around IP ownership and expectations regarding the terms of licensing agreements. Such issues will need to be addressed to both grow its R&D base as well as to enable Utah to maximize the economic development benefits of its university R&D enterprise.

Utah has already taken steps to accelerate the growth of its R&D base. In addition to providing funding to allow the U of U and USU to recruit innovative faculty in key areas of importance to the state's industry clusters (an approach often referred to as Eminent Scholars programs in other states), USTAR has provided funds to build facilities to house these researchers, and awarded grants to fund proof of concept projects. USTAR also supports commercialization activities at a number of the state's colleges and universities. Utah should continue to fund USTAR to continue these activities and/or additional activities that could be undertaken to continue to grow the state's research and innovation base in its targeted technology areas.

The State of Utah should also consider undertaking activities directly aimed at creating industry/university partnerships. These could include

- Funding public-private partnerships that bring industry, academic researchers, institutions of higher education and state government together to pursue development of a particular technology area to further the growth of an industry cluster
- Providing funding to match industry research dollars
- Creating mechanisms that bring industry and academic researchers together.

Capital Initiative – Support the Creation and Growth of Innovative Companies by Ensuring Access to Capital

Utah has been very successful in creating start-up companies. Indeed, the state's universities lead the nation in forming companies around university-developed technologies. While new firm creation is a key prerequisite for growing a knowledge-based economy, it is not sufficient. It is equally important that a state or region provide an environment in which such companies can succeed and grow.

Firms need to be able to access the resources they need when they need them. The most critical of these is capital. Business development requires not only R&D dollars but also substantial funds necessary to bring a new product or service to market. Capital is required to conduct market

assessments, develop prototypes, scale up production and establish distribution and sales outlets. Sufficient capital is necessary to grow a business through each major stage and milestone.

Interviews with entrepreneurs, faculty inventors, CEOs of companies, economic developers and venture capitalists suggest that it is very difficult to access risk capital in Utah. The gap is particularly severe at the proof of concept and seed stage but it can also be difficult to obtain later stage capital as well. This is due in part to the fact that there are few Utah-based venture capital funds to serve as lead investor.

The Utah Fund of Funds was created to attract out of state venture capital investment in Utah-based companies. The Fund has invested $120 million in 28 venture funds, seven of which are Utah-based. Despite the Fund of Funds initiative, however, it remains difficult to obtain early-stage financing and certain types of companies, especially life science companies, have difficulty obtaining capital. There are a number of approaches that states have taken to increase the availability of risk capital. They include:

- Providing commercialization grants
- Directly investing in a seed or venture fund
- Using tax incentives to encourage venture investments
- Providing comprehensive in-depth support to entrepreneurs to enable them to obtain private capital.

Talent Initiative– Meeting the Need for an Innovation Workforce

Utah's employers report that the state's workforce is well educated and hard working and that in general companies have little trouble finding workers to fill technician, production and assembly positions.

Still industry is concerned about finding the high skilled workers that they need. As Utah's industry clusters have grown, demand for skilled workers has increased and firms find that they must recruit from out-of-state (which is expensive and can be difficult to accomplish), train workers internally or recruit workers from other Utah employers. To address this issue, Utah is challenged to:

- Better link education and training programs and their students to Utah's industry clusters
- Continue efforts to improve STEM education
- Promote an image of Utah as a welcoming place that provides a wealth of opportunities for workers and businesses.

For a copy of the complete plan, please visit www.utah.gov/ustar/documents/207.pdf

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