Developing a Science and Technology Strategy for Utah

Background and Introduction

The Battelle Memorial Institute, one of the world's largest research and development organizations, through its Technology Partnership Practice (TPP), proposes to assist key private and public sector leadership from industry, higher education, the non-profit and philanthropic community, and state government to develop a comprehensive science and technology strategy for the State of Utah to better position the state, its industries, and educational institutions to grow in such key areas as life sciences, information technologies, advanced manufacturing and related technology-driven sectors of the economy.

Battelle's TPP has recently completed similar strategies for Utah's neighboring states of Idaho and Nevada and is currently working with multiple states and regions across the country, including Connecticut, Georgia. Maryland, Missouri and Ohio. Battelle's team includes leading analysts and practitioners in technology strategic planning, assessment and implementation who have designed and implemented best practice programs throughout the U.S such as Pennsylvania's Ben Franklin Partnerships Program. TPP staff played key roles in implementing Maryland's successful biotechnology development program and initiated the development of industry roadmaps and competitiveness strategies that have been implemented successfully in North Carolina. Battelle's TPP has a proven track record of successful implementation, in Governors' legislative and budget requests and legislative action, and building of coalitions that are sustaining such strategies and their implementation over a multi-year period. Ongoing implementation of TPP developed strategies are underway currently in St. Louis, Pennsylvania and Kentucky.

Approach.

Battelle's approach to undertaking strategies is based on the following principles:

- *Our overall deliverable will be designed to ensure that the set of strategies and actions are "do-able" and implementable.* It will not be another "paper plan" or study but a set of strategies and actions responsive to real needs and problems and "owned" by the key stakeholders in the state and its regions.
- *The strategies will be bold but also realistic.* The set of strategies and actions will include "outside the box" thinking about the state's technology position in the future global economy. Our core competency analysis and the benchmarking and "best practices" analysis will help ensure that Utah's strategies are based both on its strengths as well as lessons learned elsewhere in building a technology-driven economy.

- *The design of the strategy will address the key issues of a technology-driven economy: talent, technology, capital, and innovation.* Battelle will focus its efforts on these factors in the gap analysis to assess what needs to be addressed to better position Utah's economy for the future.
- *The strategies must reflect the input, views, and perspectives of the opinion leaders of the state.* Battelle's team will conduct interviews and focus groups, and review the results of previous studies in order to understand the context in which Utah has been moving, assess what has been accomplished from the earlier suggestions, and address future directions and strategies for the state. We insist on involving the client and its associated partners throughout the process to build knowledge, commitment, and identified champions for implementation at project completion.

Outlined below are some of the "core" approaches Battelle proposes to use in the management of this project:

- ***Steering Committee.*** We will work closely with a Steering Committee established for this strategy. This group will provide guidance to the effort and ensure we are being responsive to needs, opportunities, and priorities of the State.
- ***Interviews and On-site Information Collection.*** On-site information gathering from key civic, business, education, and public leaders will be an important component of the project. The interviews will be used to help define the agenda and to identify problems, issues, and opportunities.
- ***Economic analysis.*** An economic analysis will be prepared, which will identify current key industries, as well as the characteristics and needs of emerging technology-based companies.
- ***Benchmarking.*** Battelle undertakes such analyses in almost every project. Just as firms attempt to learn from the "best in class," academic institutions, regions, and states can learn from one another, building upon strengths and taking advantage of resources. Battelle's long experience with states, regions, and centers will help it identify potential benchmark candidates quickly and obtain comprehensive reviews for each benchmark.
- ***Development of a comprehensive strategy.*** The project team will propose strategies and actions that are designed for implementation. The final strategy will not focus exclusively on research, but rather on those specific science and technology competitiveness issues of which technology is a major component.

TASKS.

Key tasks for the work plan are outlined below along with deliverables for each task.

Task 1: Orientation

The Battelle Project Team will meet with the Steering Committee established for the project to discuss and finalize the work plan. This meeting will provide an opportunity to discuss the proposed work plan and timeline and to identify data and information sources

relevant to subsequent tasks. The Project Team will seek recommendation for individuals and organizations that should participate in the focus groups and/or be interviewed for this effort. In addition, we will seek the identification and receipt of various studies undertaken that would be useful as input into the development of the strategy.

Deliverable: Finalized Statement of Work

Task 2: Economic Analysis of Utah's Industry Base

We propose to undertake an economic analysis of the technology-intensive industries in Utah to identify trends, current strengths, and emerging industries and sectors within the technology field. Because of the limitations of the SIC classification system, it is extremely difficult to disaggregate and analyze the technology industry. Battelle will use Dun & Bradstreet data to aggregate data on Utah's existing industry base, identify trends, and help focus subsequent project tasks. Our previous work in other regions has provided us with a basis for developing an effective set of industry definitions for this arena that will be applied to this project.

As part of this analysis, we will employ a series of methodological techniques, including location-quotient analysis, to better discern quantitatively the nature and detail of the technology-driven economic base of the state. The end objective is to determine the base today for building emerging industries in Utah for tomorrow.

Deliverable: Economic Analysis.

Task 3: Benchmarking Best Practices in Development and Implementation of State Technology-Based Economic Development Strategies

Battelle proposes to undertake a benchmarking analysis of other states focusing on technology-based economic development. This analysis will help to identify success factors, key elements, and best practices among other states. We will provide the Steering Committee with a list of candidates to be considered. They will then choose up to six states that either have, or are developing, technology strategies, or have conducted a series of program investments. Included in the benchmarks should be one or two Western states with similarities to Utah that have attempted to build their technology base (e.g., Idaho, Colorado, Arizona). The results of these reviews will include a write-up on each of these "benchmark" states and a summary and overview of "best practices" for consideration and adoption as part of the strategy framework for Utah.

Deliverable: Benchmarking/Best Practices Comparative Analysis.

Task 4: Assessment of Utah's Technology Core Competencies

The purpose of this task is to identify the "drivers" and "core competencies" of the state upon which Utah has and continues to build its technology future. The Project Team will interview the lead research universities and technology drivers, such as administrators and faculty at higher education institutions, recipients of Centers of Excellence investments, and private sector firms undertaking R & D in the state, to obtain their views on current and future respective strengths. In addition, secondary data sources and studies will be reviewed and data collected to further help identify the comparative

advantages of the state. We will undertake direct one-on-one interviews with key research and technology administrators and center and institute directors. The end result will be an identified set of core competencies with both academic and industry relevance that have the potential to position the State for economic growth.

Deliverable: Technology Core Competency Analysis of Utah

Task 5: Technology "Gap Analysis" of Utah

Based on the core competencies, benchmarking, and economic analyses, Battelle will undertake a "gap" analysis identifying barriers and gaps in private and public investments, policies, programs, and activities that might hinder Utah's ability to have a leading technology-based economy. We suggest this "gap" analysis focus on lessons learned from our previous projects as the key factors in building a technology base. These include:

- **Research infrastructure** including faculty, facilities, and research capabilities;
- **Components of an entrepreneurial culture** including value-added networking, business service provider expertise, entrepreneurial assistance, physical space, and other aspects involving the mobilization of resources in support of technology entrepreneurs;
- **Capital,** including commercialization support, pre-seed, seed and venture capital, financing for leasehold improvements and other facilities;
- **Anchor facilities and programs** (government and/or foundation-supported) around which a critical mass of research in core areas is focusing;
- **Workforce,** including programs and curricula serving the research and industry focus of the state; and,
- **Time frame perspective** including Utah's relative progress in building a world-class reputation in research and a critical mass of firms.

This gap analysis, for each of these six factors, will address the following elements: (1) gaps in coverage, availability, support; (2) priority; (3) dimensions and size of the gap; (4) key participants that need to address the gap, and, in a later task, (5) options to address gap solutions. The "gap analysis" will include one-on-one interviews and small group discussions.

Battelle will need a local organization to take the lead in helping us by identifying and arranging interviews and small group discussions. We will develop a field interview guide for this task.

Deliverable: Gap Analysis.

Task 6: Conducting Strength, Weaknesses, Opportunities, Threats (SWOT) Review and Analysis including Focus Groups

Businesses undertake SWOT analyses to assess their strengths, weaknesses, opportunities and threats. We propose to conduct a similar analysis of the State of Utah. We will build on the work undertaken in the previous tasks to prepare a preliminary analysis.

This preliminary document will then be used as a basis for convening four to six focus groups across the state. These focus groups will help further refine the analysis, ensuring that it is as complete and comprehensive as possible. The result of the focus groups will be a completed SWOT. Individual focus group meetings will be approximately two and one-half hours in duration. "Issues" that the Strategic Plan must address are expected to emerge from the focus groups. Provided there is sufficient time, we will present a preliminary framework of possible strategies and actions, and ask the participants to provide reactions to the ideas. The Battelle Project Team will serve as the facilitators for the meetings. Members of the Steering Committee will help the Battelle project team in identifying and securing sufficient attendance at these focus group meetings, and handle the logistics for each.

Deliverable: Preliminary and Completed SWOT

Task 7: Development of Strategies/Actions and Implementation Plan.

Tasks 1-6 will provide a comprehensive set of qualitative and quantitative inputs that will form the basis for identifying the State's **vision,** the **strategies** that guide their achievement, and the short, mid-term, and long-term **actions** necessary to operationalize the strategies. The completed set of strategies/actions will incorporate the economic analysis (quantitative assessment), the lessons learned from the benchmarking study, and the SWOT (qualitative assessment), and link these to the vision.

These strategies and actions will be designed for implementation. It is expected that these strategies and actions will address the areas earlier noted in the gap analysis, which are critical to building a technology base in the state, including:

- Building and maintaining the R&D and intellectual capital base;
- Developing higher education-business partnerships;
- Reforming the business climate (taxes, regulation);
- Providing capital, primarily equity, early, and seed stages;
- Developing technology infrastructure;
- Branding/marketing of the state's image;
- Ensuring high quality of life (recreation, culture, schools, downtown amenities); and,
- Providing necessary workforce and human resources.

As part of the strategy, the Battelle Project Team will provide guidance on key implementation components, which will include the following elements: list of priorities among actions; The time frame for implementation for each action; key lead agency responsible for implementation and other partners; and, measures of success for use in monitoring strategy implementation.

A preliminary and final set of strategies and report will be prepared.

Deliverable: Preliminary and Final Set of Strategies/Actions

Task 8: Communications Roll-Out (Optional)

The momentum developed by involving the broad community in the development of the strategy must not be lost. Consequently, a "communications strategy and game plan" for educating the citizenry and mobilizing resources will have to be prepared and implemented in this optional task.

Our goal is to see the strategies converted into measurable, concrete results with real impact on the state. This communication rollout will help provide the specificity needed to assure that strategies and actions turn into concrete accomplishments.

Timeframe.

Battelle generally undertakes this set of eight tasks over a six month period. Our experience is that enough time has to be provided to involve leaders from across all sectors of the Utah economy throughout the project so that at project completion there are a set of knowledgeable champions that both understand the strategies and can lead their implementation. Doing things too quickly can create dysfunctional impacts that limit successful implementation.

Financial Resources Required.

A firm price will be provided once sufficient funds have been identified and all sponsors/contributors have reviewed and approved the scope of work and tasks as outlined above or modified. Battelle's preliminary estimate is that the total cost of this project will range from $190,000 to $245,000 depending on the specific approach chosen.