Closing the Loop on University-Industry Collaborations for Innovation in New Orleans

Prepared for

Regional Planning Commission

and its University and Economic Development Organization Partners

Under a grant from the
US Economic Development Administration
May 1, 2013

EVA KLEIN & ASSOCIATES

Strategies for the Global Knowledge Economy

Acknowledgement of Sponsorship

This report was prepared by Eva Klein & Associates, Ltd. on behalf of the Regional Planning Commission under investment number 08-79-04460 from the US Economic Development Administration, US Department of Commerce.

The statements, findings, conclusions, and recommendations are those of the authors and do not necessarily reflect the views of the US Economic Development Administration, the US Department of Commerce, or the organizations and institutions named in this report.

Cover Images

Bio Images at:
http://www.neworleansbio.com

NCAM Images at:
http://www.nasa.gov/centers/marshall/pdf/167063main_MSFC%20NCAM%20FS%20copy.pdf

River Images provided by:
Dr. Michael Blum, Tulane University

EKA EVA KLEIN & ASSOCIATES LLC
Strategies for the Global Knowledge Economy

503 Seneca Road Great Falls, Virginia 22066 USA
PH: 703.406.6100 F: 703.406.6101
evakleinassociates.com evaklein@evakleinassociates.com

May 1, 2013

Regional Planning Commission
10 Veterans Boulevard
New Orleans, LA 70124

Via: Ms. Kara Mattini Renne and Ms. Amber Seely

Dear Ms. Renne, Ms. Seely, and Members of the Regional Planning Commission:

With this letter, Eva Klein & Associates (EKA) is pleased to transmit the final report of our assignment—*Closing the Loop on University-Industry Collaborations for Innovation.*

The report documents the background, objectives, methods, findings, and recommendations of the study. To keep content as brief as possible in the report body, detailed information is provided in a series of Exhibits.

Although this project was boldly conceived and named *"Closing the Loop…,"* this report cannot actually close the loop, but hopefully can point to strategies for dynamic strengthening of a *Regional Innovation Eco-System* in New Orleans—strategies that, over time, will serve to *close the loop*. In that light, we also hope that the *Asset Inventory Database* (the other output of this study) also is a first step toward an even more robust, and constantly updated, tool that, in turn, will become part of a continuous effort to brand and market Greater New Orleans as a **College Town** and as a **Hub of Innovation**. Such an identity is apt and fitting not only because Greater New Orleans indeed is home to many diverse universities and colleges which, together, represent significant intellectual assets for innovation—including preparation of the 21st century knowledge work force and generation of technological and social innovations with potential economic (and social) value. It also is apt because Greater New Orleans already has many small and large innovating companies, in several 21st century industry sectors, whose closer ties to the universities can only bring prospects for additional economic growth.

We are indebted to the RPC and to the members of the project's Working Group for their able leadership of this initiative. Also, we were fortunate to have the participation of many others—including representatives of universities, economic development organizations, and industry, in the Workshops. *Strategy Recommendations* in this report **resulted directly from the ideas of New Orleans participants in the Workshops**, although influenced by our advice which, in turn, is rooted in our national experience.

Our recommendations are framed in two categories—*General* and *Industry-Specific*:

- *General Recommendations* begin with an aspirational idea for a new way to organize, to expand university-industry-EDO collaborations. Our proposal for creation of this new vehicle for organizing collaborations—*New Orleans Regional Innovation Alliance (NORIA)*— then is followed by nine related, supporting recommendations.
- Although seven target industries were of interest, *Industry-Specific Recommendations* are proposed for three of the seven, based on Workshops. This represents an opportunity for further work of this type in the other industries.

A summary of recommendations immediately follows this letter.

We enjoyed this opportunity to serve the objective of planning for New Orleans' bright future. And, should we be able to support ongoing implementation or further planning activities, it would be our pleasure to do so.

Very truly yours,

Eva Klein

Eva Klein
cc: Members of the Working Group, *Closing the Loop* Study

Summary of Recommendations

This list of recommendations provides a form of *Executive Summary*. We urge readers to read the actual recommendations in Sections 4 and 5 for better understanding of the intent, as the strategy titles below are not complete descriptions.

General Strategy Recommendations

Strategy #1 Create a University-Led Regional Alliance Organization for Innovation

Strategy #2: Consider Branding Greater New Orleans with a Name, Like *Innovation Crescent*

Strategy #3: Define *Innovation* Broadly—All Knowledge Disciplines

Strategy #4: Define *University-Industry Innovation Partnerships* Broadly

Strategy #5: Create Regional Innovation Metrics (Scorecard) and Monitor Progress

Strategy #6: Explore Three Specific Ideas for Improving University Policies, Culture, and Very Early Stage Funding for Innovation (the three ideas are provided)

Strategy #7: Improve the *Asset Inventory Database* and Build Around it a Collective *Front Door* and Marketing Program

Strategy #8: Evaluate and Pursue Big Grant Applications

Strategy #9: Expand Experiential Education as a Critical Workforce Development Tool and as a Form of Industry Partnerships

Strategy #10: Use the Workshop Model as a Tool to Launch Discussions of Additional Topics, Themes, and Industry-University Partnership Initiatives

Industry-Specific Recommendations

BioSciences (BIO)

Strategy BIO #1: Strengthen Market Intelligence-Gathering, Adopt "Relationship Marketing" Tactics, and Establish New Orleans as a "Player" in Biosciences

Strategy BIO #2: Continue to Strengthen BioFund and Acquire Proof-of-Concept Funds

Strategy BIO #3: Find One or Two Niches for Scaling Up Competitiveness of BioSciences Capacities with Significant New Funding for Niche Investment (examples are provided)

Coastal Stabilization and Water Management

Strategy CR #1: Establish an Organizational Vehicle for Ongoing Planning and Oversight of Collaborative Projects

Strategy CR #2: Select/Develop Applied Innovation Projects—Immediate and Longer Term

Strategy CR #3: Develop and Carry Out Policy, Contracting, and Funding Advocacy

Advanced Manufacturing (NCAM—STEM^2 Education)*

Strategy AM #1: Inventory Existing STEM^2 Programs and Design Regional STEM^2 Metrics

Strategy AM #2: Collaborate to Help NCAM Develop its STEM^2 Plan and to Support Delgado's US Navy Grant Program

Strategy AM #3: Organize to Plan Regional Research/Development Niches and Collaborations in Advanced Manufacturing

*In this report, STEM^2 indicates "Science, Technology, Engineering, Mathematics, and Medicine"

Contents

1—Introduction to the Study

Background 1
Study Objectives 2
The Region 3
Study Working Group and Stakeholder Entities Represented 4

2—Study Methods

Contexts: Defining *Innovation* and *Regional Innovation Eco-Systems* 5
Selection of Target Industries 7
Coordination with Louisiana Economic Development/Battelle Study 7
Asset Inventory Database 7
Success Stories 9
University-Industry Workshops 9

3—Findings: Regionalism, Scale, Diversity, and Collaboration in the Knowledge Economy

#1—Viable EDO Structure and Scale in the Region 11
#2—Unprecedented EDO Alignment on Industry Targets 11
#3—Effects of Size and Diversity of the Universities 12
#4—Benefits of Collaboration Embraced by the Universities 14
#5—Leadership Models in Community Connections and Service Learning Programs 14

4—General Strategy Recommendations

Goals 15
Strategies 15

5—Industry-Specific Strategy Recommendations

Biosciences—Goals 25
Biosciences—Recommendations 25
Coastal Stabilization and Water Management—Goals 26
Coastal Stabilization and Water Management—Recommendations 26
Advanced Manufacturing—Goals 27
Advanced Manufacturing—Recommendations 27

6—Implementation Considerations and Next Steps

Implementation Considerations 29
Suggested Next Steps 30

7—Exhibits

Exhibit 1—Recent Media Coverage of New Orleans and Innovation 31
Exhibit 2—Working Group Members 32
Exhibit 3—Stakeholder Organizations 33
Exhibit 4—Methodology for the Asset Inventory Database (AID) 37
Exhibit 5—Tulane Riverfront Campus: A University-Industry Dialogue about Expanding R&D and Business Partnerships for Coastal Restoration and Water Management 40
Exhibit 6—NCAM: Organizing for the Next Generation of Accomplishments in STEM^2 Education 42
Exhibit 7—Enhancing Life Sciences Collaborations: What Does Industry Need from Universities? 44
Exhibit 8—Innovation U: Enhancing the University's Role in Innovation-Based Economic Development 46
Exhibit 9—Student Experiential Education Programs— Another Pathway for University-Industry Collaborations 47
Exhibit 10—Scale of Higher Education in Greater New Orleans—Selected Statistics 49
Exhibit 11—LSU A&M College—R&D Expenditures (as One Benchmark) 52
Exhibit 12—Examples of University Consortia 53
Exhibit 13—Examples of Federal Grant Opportunities 56
Exhibit 14—Experiential Education Resource Information 58

10 best (and surprising) cities to start a business

Entrepreneur

AUGUST 2009 | ENTREPRENEUR.COM

New Orleans:
a blueprint for economic recovery

FOUR YEARS AFTER KATRINA, ENTREPRENEURS ARE RECONSTRUCTING THE ICONIC CITY.

INSIDE THE $16.4 MILLION BUSINESS OF STURGIS

PICTURED CLOCKWISE FROM UPPER LEFT:
NEW ORLEANS ENTREPRENEURS ROBBIE VITRANO, SEEMA SUDAN, SEAN CUMMINGS AND BRENT McCROSSEN

1—Introduction to the Study

Background

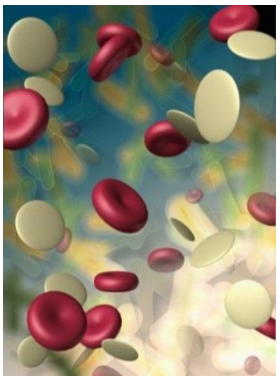
In recent years, the Greater New Orleans region's higher education institutions (referred to herein as *universities* but nonetheless meant to include community colleges, as well as the senior universities) and economic development organizations (*EDOs*) have been working steadily to enhance the means by which the universities engage in *knowledge-based economic development*. These activities were stepped up in the wake of Hurricane Katrina and some initiatives have benefited from post-Katrina funding.

Katrina and other regional disasters notwithstanding, like every other metro area and region in the US, New Orleans is still very much in the process of defining how all this works—how to achieve a *regional innovation eco-system* that enhances innovation from new knowledge, including not only bench research that generates new economic activity, but also using innovation to enhance market performance and growth of existing businesses in the region's economy.

For their part, the universities have come to understand more clearly than ever how vital their roles are, although, like their peers everywhere, they still have structural or cultural impediments to fully realizing their potential impact. And, like elsewhere, university-industry business culture gaps remain to be bridged.

Finally, with its abundant institutional resources, New Orleans has yet to brand itself as a *college town* in the new 21st century sense of what that means. Likewise, it is working to definitively brand itself as a *hub of innovation.* There are positive signs that recognition of New Orleans for its innovation capacities is beginning to emerge in national media coverage. (See *Exhibit 1—Recent Media Coverage of New Orleans and Innovation*, for a list of several recent examples of favorable media coverage.)

Economic development leaders in Greater New Orleans have seized on the potent possibilities inherent in selling a city that has both great *innovation* capacities and great *quality of place,* style and character.



Study Objectives

In this complex environment, the Regional Planning Commission (RPC) decided to use some of its Regional Innovation Center funding from the US Economic Development Administration (EDA) to sponsor the present study—***Closing the Loop on University-Industry Collaborations for Innovation.***

Initial Scope Intent

Initially, objectives of the study were described in the RFQ and EKA's submission as follows:

With its partners—the universities, the New Orleans BioInnovation Center, and the Louisiana Technology Council—the RPC seeks a study that will provide important elements of strategy for building the New Orleans Innovation Economy. The PN and SOW describe a gap analysis focused directly on the research and innovation capacities and functions of the universities, including, but not limited to:

- Local research strengths
- Opportunities for collaboration with existing regional, state and national industry entities
- Recommendations for assets, policies, and cultural shifts necessary to accelerate research and commercialization
- Ideas for inducing the cross-pollination of research amongst universities

The selected consultant will work with the Steering Committee to provide the gap analysis and develop recommendations, including prioritized next steps, with cost estimates where applicable. The consultant team may assist in implementation.

EKA was selected based on a competitive RFQ to provide this work. With the Working Group's input, details were developed for how to focus on two main areas of effort, to:

- Create an *Asset Inventory Database* of university programs, resources, facilities, and personnel of relevance to the target industries
- Develop *Strategy Recommendations* for strengthening innovation collaborations (using focused Workshops as the main tool for strategy development).

Work tasks were as follows:

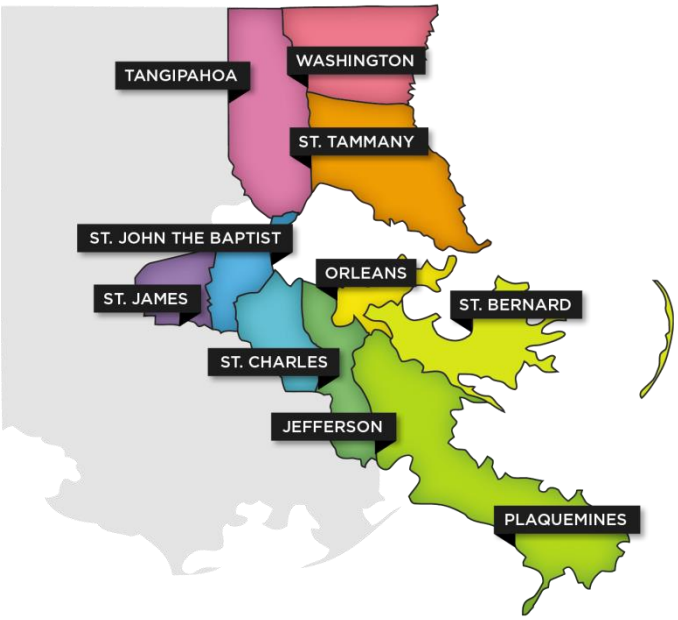
- Decide which industries to focus on, primarily for the scope of the *Asset Inventory Database,* but also for Workshops and consideration of *Strategy Recommendations*
- Use university websites as the main means of collecting information about assets and organize them into defined *Asset Categories*
- Review the *Asset Inventory Database* draft with each institution and obtain edits/corrections
- Prepare the *Asset Inventory Database* for delivery (and subsequent conversion into a website)
- Select topics for Workshops and plan agendas, speakers, and participants
- Conduct/ facilitate the Workshops and use the outcomes for analysis and development of recommendations
- Develop findings and *Strategy Recommendations* (this Report).

The Region

The RPC formally represents a five-parish region that constitutes its *Planning Development District* (Jefferson, Orleans, Plaquemines, St. Bernard and St. Tammany Parishes).

Great New Orleans, Inc. (GNO, Inc.) defines *Greater New Orleans* as a larger 10-parish region.

For this study, the definition of region was less specific. It is, in general, *Greater New Orleans.*



EVA KLEIN & ASSOCIATES

RPC Project Managers

Kara Mattini Renne
Amber Seely

EKA's National and Local Team

Eva Klein, Project Director
Steven A. Spalding, Project Manager
W. Mark Crowell, Consultant
Norma E. Grace, Consultant
Joseph F. Lovett, Consultant
Marcia Mellitz, Consultant
Erol Yildirim, Asset Inventory Database Developer

Audiences for this Report

Primary audiences for this report are leadership of the academic institutions, EDOs, and industry groups that participated in the study, in any way—as well as the US Economic Development Administration, which funded this work.

In addition, we hope that this report will be distributed to (and found useful by) the following key audiences:

- Industry/trade groups in Greater New Orleans and their members
- Community organizations and foundations
- Other potential funding agencies—federal, state, and local agencies and private corporate or philanthropic donors to higher education and economic development purposes

Study Working Group and Stakeholder Entities Represented

Representatives of the participating universities and EDOs were organized into a Working Group, which met at the outset and conclusion of the study and during the work; participated in planning and conducting the Workshops; supported development of the *Asset Inventory Database*; and contributed review comments to this final report.

The region's higher education institutions that participated actively in this study are shown in the following map graphic. Southern University New Orleans (SUNO) also was invited to participate, but did not do so. We nonetheless included preliminary information for SUNO in the *Asset Inventory Database*. The RPC hopes to engage SUNO in follow ups to this work.

New Orleans Academic Participants in "Closing the Loop..." Study

Some membership turnover occurred within the Working Group since the study was undertaken in early 2012. Please see *Exhibit 2—Working Group Members* for a list of the Working Group members as of January/February, 2013.

Also, please see *Exhibit 3—Stakeholder Organizations* for short descriptions of the client/stakeholder entities that the Working Group represented—as participants in the study.

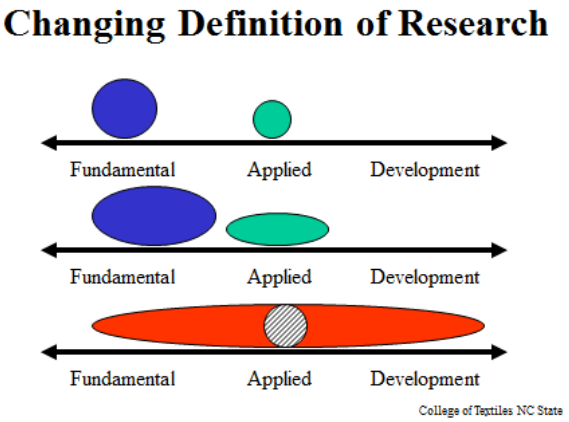
2—Study Methods

Contexts: Defining *Innovation* and *Regional Innovation Eco-Systems*

This study for Greater New Orleans takes place within a much broader national and international context of changes and evolution in (1) how research is performed; (2) the emergence of the concept of *regional innovation systems* and (3) the concept of the post-Ivory Tower era *engaged university*. The text and graphics on this page and the next provide a very brief overview of these macro contexts—as background for this study.

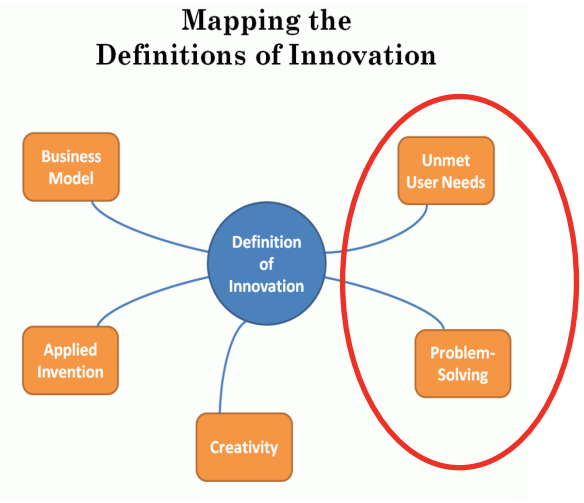
Evolving Research Models

As illustrated in the adjacent *Changing Definition of Research* graphic, created in the late 1980s by a dean at NC State University, we (in universities and economic development) began about then to realize that the linear and uni-directional model of research—from basic to applied, and then to development—that had been in place and led by the National Science Foundation in the late-stage Industrial Economy (post-World War II)—no longer correctly expresses how various stages of research occur in the 21st century *Global Knowledge Economy.* In the 20th century model, universities were players primarily in *fundamental* or *basic research*, and they were not at all engaged in *development.* Companies did *applied research and development* and federal government labs did *mission research*, primarily defense-related. Today, there is much greater fluidity as to which sectors perform which stages of R&D and the funding patterns for all stages of innovation are evolving—although the boundaries dividing the sectors are not fully removed.



From Tech Transfer to Innovation

From 1981, with the passage of the Bayh-Dole Act—under which universities may own intellectual property arising from federally funded research—the main focus of attention on innovation among research universities has been on disclosures, patenting, and licensing. For most universities, the initial emphasis in technology transfer was the perceived potential for significant licensing revenue. Some universities may have been more realistic in articulating their priorities vis-à-vis the challenges in generating significant licensing revenue, but nevertheless most developed their business model around the concept of the tech transfer function being self-supporting by retaining a percentage of licensing revenue. Whether an overt goal or the result of a poorly-conceived business model, the focus on financial self-sufficiency and on unrealistic prospects and timeframes for generating financial impact drove (and still drives!) many technology transfer programs to make poor decisions, to overlook long-term but highly promising intellectual property assets, and to make strategic partnering decisions which may not be best for **regional** innovation, business, and economic development.

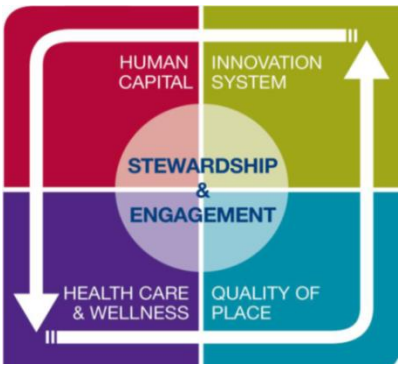


Hutch Carpenter, *25 Definitions of Innovation,* Aug 18 2010, Cloud Avenue

But, today's more progressive and high impact models of university-based technology management organizations are those where *innovation* is a much broader concept—and, happily, one that actually is more closely related to the core scholarship model of universities—but with the difference that scholarly inquiry now is married more closely with pragmatic outcomes: That is, we now focus more on how the outputs of scholarship *actually will be used by the beneficiaries of society's knowledge investments*—and a focus on local/regional impact is considered important. This impact factor always has been the model in medicine—*bench to bedside* or *molecule to man.* In other university disciplines, the faculty's focus on directly addressing unmet needs of constituents and beneficiaries is a much newer feature.

Varied Definitions of Innovation

EKA especially prefers definitions of innovation that focus broadly on *unmet user needs and problem-solving*—thus implicating all knowledge domains—not just science and engineering—in processes of innovation.



Copyright, 2010, University of Toledo and Eva Klein & Associates, Ltd.

Engagement

An even broader definition is embodied in the terms *engagement* or *stewardship.* If the 21st century university is an *engaged institution*, then, while science and technology are important, the STEM[2] disciplines are by no means the only knowledge disciplines through which institutions engage with constituencies to innovate, and seek to directly solve unmet needs.[1]

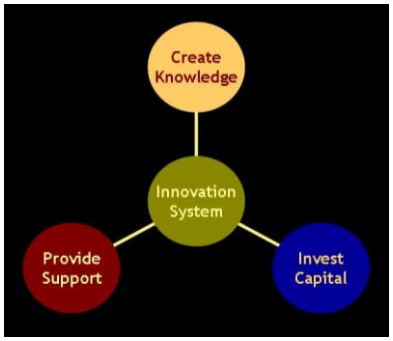
For example, EKA's engagement model developed for the University of Toledo is shown in the graphic.[2] It shows the practice of stewardship and engagement permeating all four missions.

Regional Innovation Eco-Systems

In Europe, it became common to speak about *regional innovation systems* long before it became common in the US. Various metaphors for characterizing how European universities participate in *regional innovation systems*, provided by a 2006 literature review by/for the Organization for Economic Development Cooperation (OECD), are shown below.[3]

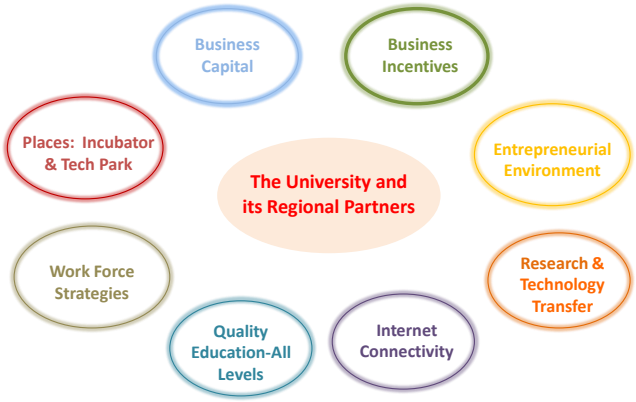
Metaphors for Higher Education Roles in Regional Innovation Systems

- Machine Metaphors:
  - Suggestion that this is where the pace is set for the region's progress
  - "Engine," "powerhouse," "driver," "dynamo," "booster," "accelerator," or "lever"
- Biological Metaphors:
  - Suggests associations with something that sprouts, then blossoms or reinvigorates
  - "Hothouse," "seedbed," "breeding ground," "spawning place," "catalyst," or "fermenter"
- Network Metaphors:
  - Suggests access to and dissemination of information and knowledge
  - "node," "hub," "bridgehead," "mediator," "coupling unit," "transfer point," "transmission centre"
- Time Metaphors:
  - Suggests higher education takes the lead in a transformation process
  - "Spearhead," "vanguard," "lighthouse," and "signpost"



To date, there is still no single definition of an ***innovation system*** and its elements, but we are moving rapidly toward various working definitions. EKA versions from 2005 are shown here.

Elements of a University-Centric Regional Innovation System



Copyright Eva Klein & Associates, Ltd., 2005

For This Study

Initially, this study was to focus on research—relating to specific industry segments of interest to New Orleans. It was deliberately decided to exclude workforce development—itself an immense topic that would be difficult to address comprehensively. However, from Working Group dialogue, the study scope was expanded to address selected aspects of the education mission of the institutions—and the related matter of workforce for industry—as part of the *regional innovation eco-system*.

For this study: ***Innovation is the process of applying new knowledge to solve problems or meet unmet user needs. All knowledge disciplines are potentially involved and, as the orientation is problem-solving, a multidisciplinary focus often is required.***

This means that innovation is a core value and pursuit of all the institutions—not only the research-performing universities. And it means that innovation also is a factor in education—in the learner's experience.

[1] STEM[2] = Science, Technology, Engineering, Mathematics, and Medicine

[2] From Jacobs, Lloyd A. and Klein, Eva. *The Relevant University: Making Community and Economic Engagement Matter*, The University of Toledo, 2010

[3] Peter Arbo, Peter and Benneworth, Paul. *Understanding the regional contribution of higher education institutions: A literature review, Introduction, pp. 6-7, OECD, 2006*

Selection of Target Industries

The first task of the Working Group and the consultants (in March 2012) was to select the target industries on which the study would focus. Target industries were compiled from prior studies and EDO documents. Sources the Working Group considered included the following:

- *Comprehensive Economic Development Strategy* (regional plan)
- Industry targets of GNO, Inc.
- Industry targets of Louisiana Economic Development (Blue Ocean study primarily)
- Industry targets of New Orleans Business Alliance (under discussion at the time)
- Industry strengths in the New Orleans metro/region
- University strengths in the New Orleans metro/region
- Coordination of extensive ongoing investments and efforts focused on BioSciences by BioDistrict New Orleans, New Orleans BioInnovation Center, and Louisiana Cancer Center
- *First Louisiana*-identified *Enabling Technologies* (materials science/nanotech, computational science/IT, bioscience/biotechnology)

From these, seven industries of interest for this study were selected by the Working Group:

- Advanced Manufacturing
- BioSciences
- Design
- Digital Media and Enterprise Software
- Emerging Environmental—Energy
- Emerging Environmental—Water
- Transportation.

Reflecting priorities and insights of both academic and EDO members of the Working Group, the target industries thus selected (in March 2012) provided a primary filter to drive the process of building the *Asset Inventory Database*. Put another way, the *Asset Inventory Database* was meant to be relevant to these specific target industries. (See discussion of the *Asset Inventory Database* below.)

This report includes strategy recommendations only for three of the seven industries—those that were the subject of discussion in the scheduled Workshops.

Coordination with Louisiana Economic Development/Battelle Study

Soon after the inception of this study, Louisiana Economic Development (LED) undertook a study with similar but broader, statewide objectives, entitled *Louisiana Research and Innovation Asset Inventory Project*. That study, supported by the Battelle Technology Partnership Practice, was carried out in approximately the same timeframe as EKA's work. LED's project manager for the Battelle work also was a member of the Working Group for EKA's work. And, telephone conferences were held to ensure that the work of the two studies was reasonably aligned.

Asset Inventory Database

Strategic Intent

The *Asset Inventory Database* (AID) was created as a tool to help support innovation-based economic development in the New Orleans region, by expanding potential opportunities for collaboration between the business and academic communities. The AID would contribute to enhancing industry-university collaborations by improving industry and EDO access to information about key assets and capabilities that are available at the academic institutions in the region (those that were study participants).

A key assumption drove this exercise: Information about assets and capabilities that is of potential value in leading to university-industry collaborations (and in turn, to regional economic development), is currently difficult for companies or EDOs to locate in a systematic, easily findable form. This difficulty exists for a number of fairly obvious reasons, including the:

- Number of academic institutions in the NOLA region and their geographic dispersal

- Scale, complexity, and diversity of the academic enterprises at the institutions
- Variations in how each institution organizes and communicates information about its programs and capabilities to its various audiences.

Additionally, not all information about each institution is equally relevant for the economic development purposes driving this study: The AID thus is not a comprehensive compilation of all offerings and resources of each university. The study's sponsors perceived the need to simplify the process of searching for *industry-relevant information* (*assets*), and to standardize the types of assets such that industry-oriented users might find what they seek in an "apples to apples" form across all the academic institutions.

In this first iteration, the AID includes information about the programs and assets at the seven participating universities and Delgado Community College. It is our expectation that, as this tool is developed and enhanced, industry-relevant information from the additional regional institutions may be added.

Intended/Prospective Users

From initial discussions with the Working Group and RPC staff, the following potential users were identified as primary audiences for a new AID.

- Economic development organizations (on behalf of specific business prospects or members and in general marketing of Greater New Orleans)
- Companies (e.g., local companies looking for research or problem-solving partnerships; companies considering a move to Greater New Orleans)
- Industry site locators (on behalf of confidential clients)
- Venture capital investors (funds; corporate)
- University faculty, administrators, staff (to identify resources at nearby institutions that may prompt ideas for collaborations).

Asset Categories

In addition to the capability of searching for assets by industry, it seemed important to identify information for inclusion in the AID by types or broad categories of assets.

Accordingly, the consultant team organized seven *Asset Categories* as follows:

- **Organized Research Programs, Centers, and Institutes**

  Includes specifically organized **programs** of research and identifiable stand-alone facilities and research entities or organizations. Includes "Industry-University Alliances for/in Centers of Excellence"
- **Other Specialized Laboratories, Core Facilities, Instrumentation or Equipment**

  Includes other kinds of research assets, such as animal facilities, testing laboratories, special instrumentation, e.g., 3-D printing
- **Industry-Specific Education**

  Includes only degree programs and certificate or training programs that are reasonably relevant to (or focused on) targeted industry sectors
- **Business-Industry Partnerships**

  Includes special outreach, demonstration or externally-focused innovation programs or initiatives (i.e., activities that are not necessarily research). Also includes business/industry advisory councils
- **Entrepreneurship Resources and Other General Business Services**

  Includes support services or other externally-focused professional or business services. Also includes entrepreneurship programs. Also may include business capital sources/resources and incentives, if any

- **Internal Infrastructure to Support Research and Innovation**
  Includes research administration, technology transfer office, Institutional Review Board (IRB), and research / innovation policies. Also may include incubator facility or services or research park
- **General Information: Degrees, Faculty, Administration**
  Includes general information about the institution, e.g., lists of degree programs, academic units; faculty personnel; and administrative units.

Data Collection and Review

University members of the Working Group urged EKA to find a way to develop the AID without (yet another) query for information that they have provided to others in the past. With this guidance, EKA devised an approach for capturing already available information via websites of the participating institutions—and to use the AID as a device to collect in one place, sortable by industry and asset categories, information that could be accessed, via the database, to existing URLs. The university Working Group members then reviewed, edited, and, where necessary, supplemented information thus compiled.

Manner of Use—Intention for Web Platform

It was not within the scope of this study to convert the AID into a functioning, operational web platform; however, that is the ultimate intention. Recommendations for next and ongoing steps are provided in Section 4, as part of Strategy #7.

Additional description of the methodology for development of the AID is provided as *Exhibit 4—Methodology for the Asset Inventory Database (AID).*

Success Stories

Another type of information, *Success Stories*, was identified late in the AID development process. The idea was to capture stories about successes in university-industry collaborations for innovation. Data collection for this element could not be performed by scanning websites, as selection of the *stories* requires value judgments by the respective institutions about successful projects/programs. An initial effort was subsequently undertaken to collect information for *Success Stories* from the universities. That work is underway, but not completed. When developed, this collection of *Success Stories* should be a separate product for use in marketing, and added to the website that contains the AID.

University-Industry Workshops

Topic Selection

The project plan was to use the format of workshops—in which industry, university, and EDO participants would interact—as the primary means for developing *Strategy Recommendations.* Workshop topics evolved as the AID was being developed. Topics ultimately were selected based on the industry segments of interest, but also taking into account other activities and ongoing efforts of the universities, EDOs, and industry groups, including:

- A workshop sponsored by Louisiana EPSCoR and conducted in New Orleans in April 2012—*Industry-Academia Collaborative Biosciences Workshop* (an EKA team member attended)
- GNO, Inc.'s work with industry in Coastal Stabilization and Water Management and ongoing activities of the Coast Builders Coalition (relating to the industry we had called *Emerging Environmental-Water*)
- Tulane University's planning for the Tulane Riverfront Campus
- Recent changes for the National Center for Advanced Manufacturing (referred to as *NCAM 2.0*)
- The Navy's cooperative education agreement worth $10MM with the State of Louisiana and Delgado Community College, to support existing education, training and workforce development of the maritime industry trades.
- Already established linkages in Digital Media/Software

Ultimately, five Workshop topics were selected—three industry-specific and two general topics.

Three Industry-Specific Workshops

- "Tulane University Riverfront Campus—A University-Industry Dialogue about Expanding R&D and Business Partnerships for Coastal Restoration and Protection"
  (Presentations: Scott Kirkpatrick, Coast Builders Coalition; Michael Blum, Tulane University)
- **"NCAM: Organizing for the Next Generation of Accomplishments in STEM Education"**
  (Presentations: Rick Koubek, LSU College of Engineering; Norm Whitley, UNO College of Engineering)
- **"Enhancing Life Sciences Collaborations: What Does Industry Need from Universities?"**
  (Presentations: Robert Zivin, University of Miami, formerly with Johnson & Johnson; Sanjeev Munshi, Merck; Marcia Mellitz, BioSTL and EKA Consulting Associate)

Life Sciences Workshop

From left, speakers and moderator: Sanjeev Munshi, Robert Zivin, Mark Crowell, and Marcia Mellitz

While we would have liked to organize Workshops on themes related to all seven industries of interest, resource limitations required us to focus on topics which the Working Group members had prioritized as being of most immediate or unique value, and where some level of organization and physical presence already exists—either on the university side or on the industry side. Thus, the opportunity remains to develop and conduct similar Workshops on themes relating to the additional four target industry segments:

- Environmental-Energy
- Design
- Transportation
- Digital Media/Software.

NCAM Workshop

From left, Susana Schowen, LED Fast Start; Rick Koubek, LSU; Mark Crowell, EKA; and Norm Whitley, UNO

Two General Topic Workshops

- **"Innovation U"—A Model for University Innovation Activities"**
  (Presentation: W. Mark Crowell, Chief Innovation Officer, University of Virginia and EKA Consulting Associate)
- **"Student Experiential Education Programs—Another Pathway for University-Industry Collaborations"**
  (Presentation: Eva Klein and informal presentations by participating universities).

Participants were invited to the *Workshops* primarily by the universities, with EDOs providing industry participants in some cases. The *Workshops* were well attended. Participants engaged in lively, constructive dialogue that literally was rich enough to provide substantial content for the strategy recommendations in this report.

For details, *Exhibits 5, 6, 7, 8* and *9* contain the agendas, speakers, and participants for each of the five *Workshops.*

3—Findings: Regionalism, Scale, Diversity, and Collaboration in the Knowledge Economy

Because the strategic intent for this study was to (1) create a new tool (***Asset Inventory Database***) with high practical utility; and (2) recommend **future strategies for implementation**, it was not our intention to present what normally are consultant "findings" or "observations." That said, a few of the EKA team's observations seem worth summarizing, before we present recommendations.

In today's *Global Knowledge Economy*, being "good" is not necessarily enough. It seems also necessary to be "big." Competition in most knowledge-based industries increasingly requires significant scale—concentration of resources—which then operates like a snowball: The more there is, the greater the likelihood of further growth. It is for this reason that our observations about regionalism, scale of assets, and readiness for collaboration are pertinent to the formation of recommendations. On these parameters, this study brought into focus the following five findings—**all positive**—for New Orleans' future implementation of an innovation strategy.

Industry Targets for this Study

Industries were selected by the study Working Group in March 2012, based on combination of industry strengths, university strengths, and EDO priorities known at that time:

- Advanced Manufacturing
- BioSciences
- Design
- Digital Media and Enterprise Software
- Emerging Environmental—Energy
- Emerging Environmental—Water (later focused on Coastal Stabilization and Water Management)
- Transportation (relates to Trade and Logistics)

#1—Viable EDO Structure and Scale in the Region

New Orleans metro, like most other urban centers, has regionally-defined EDOs (GNO, Inc. and the Regional Planning Commission) and parish-level EDOs (e.g., St. Tammany Economic Development Fund, Jefferson Economic Development Corporation, and the newest, New Orleans Business Alliance). While complex, this mix of narrower and broader geographic focus is healthy. It permits local focus where such focus makes sense, while also making collective action on broader strategies possible. A strong sense that regionalism matters is now quite apparent in Greater New Orleans, because EDO leadership knows that commuting patterns, economic activity, and industry strengths all play out on a regional level. There also is significant appreciation of the need for larger scale in branding and promoting Greater New Orleans in the *Global Knowledge Economy*, both for internal growth of existing industry and innovation assets, and also for recruitment of companies and talent from elsewhere.

#2—Unprecedented EDO Alignment on Industry Targets

An unprecedented degree of alignment of EDO strategies with respect to target industries for future growth has emerged in Greater New Orleans. Further, the New Orleans EDOs' target industries largely track with the State's priority industries, as pursued by LED.

Among the many, many reasons why this degree of alignment is beneficial is that it helps the universities shape their priorities in light of the entire region's growth strategies, without having to differentiate responses completely for each EDO partner. This should make it much easier for the universities and EDOs to work together productively.

Another advantage of alignment is that it should facilitate EDO collaboration on pursuing more sources of risk capital for the region—a big innovation eco-system need—and one that is in the domain of the EDOs to pursue. (Several EDOs have been working on developing angel capital networks within the Greater New Orleans region.)

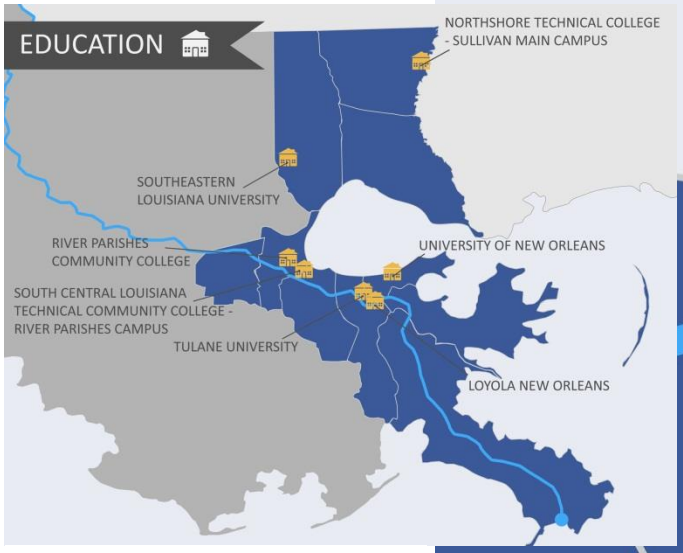
Multiple EDOs have aligned in support of CEDS clusters that are growing better paying jobs.

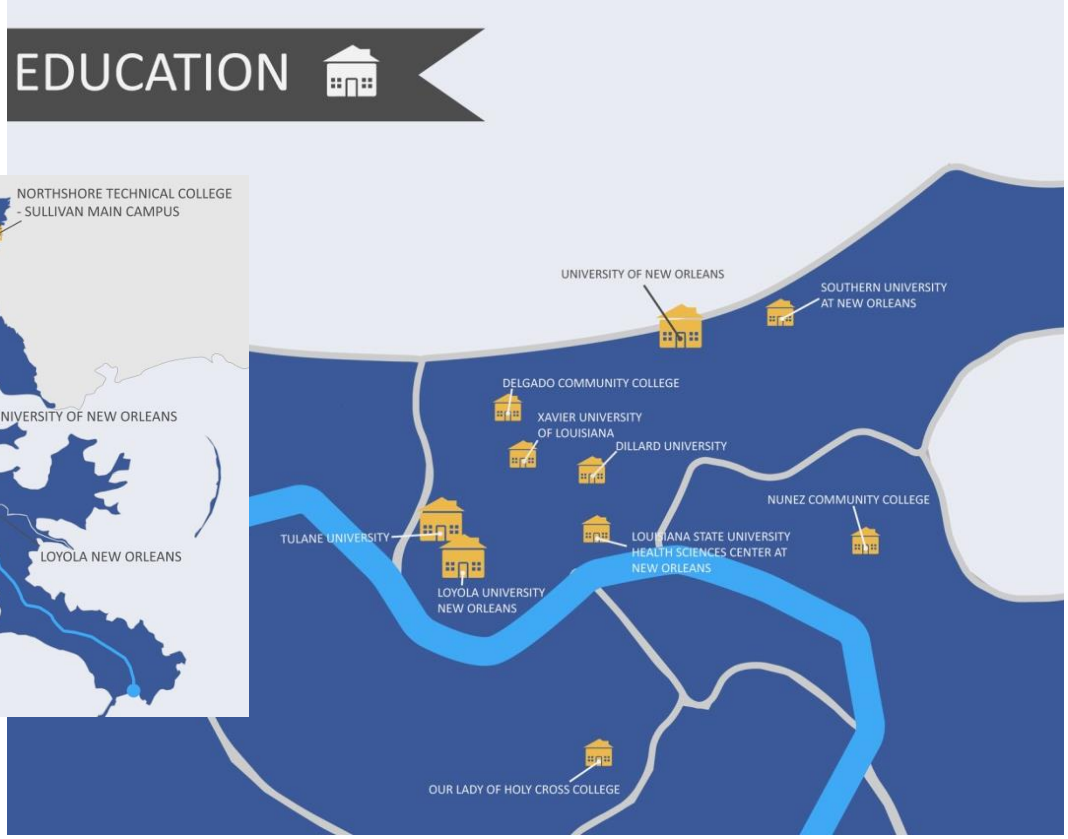
CEDS	LED	GNO Inc	NOLABA
International Trade & Logistics		International Trade	Transportation & Logistics
Creative Media & Design	Digital Media & Software	Software & Digital	Digital Media
Energy & Plastics	Energy	Energy	
Green Technology & Environmental Services	Clean Tech & Water Management	Emerging Environmental	Sustainable Industries
Healthcare Delivery & Biosciences	Specialty Healthcare	Biosciences	Bio-innovation & Healthcare
Food Manufacturing & Fishing	Agribusiness		
Aerospace & Advanced Manufacturing	Advanced Manufacturing	Advanced Manufacturing	Advanced Manufacturing
Tourism			

Source: Adapted from a table prepared by GNO Community Data Center for the Regional Planning Commission, February 2013

#3—Effects of Size and Diversity of the Universities

Most of the institutions in the Greater New Orleans region are not really large, by today's scale of higher education institutions. Smaller size can serve to constrain each individual institution's competitiveness, for example, in pursuing large-scale grants and in seeking to establish industry relationships. This is a reason to promote more collective undertakings—for those kinds of partnerships or pursuit of resources in which scale and size matter.





Map images courtesy of GNO, Inc.

Great Diversity

On the other hand, more than other places in which EKA has worked, New Orleans has an unusually diverse mix of *institution types*—and a full array of disciplines/programs. This degree of diversity is a great strength—if/as New Orleans strives to brand itself as a *college town.*

Universities and Colleges in Greater New Orleans—Great Diversity by General Institutional "Types" and Programs

	Public Research University	Private Research University	Academic Health Sciences (Medicine)	Compre-hensive University Programs	Liberal Arts Focus	Engineering	Pharmacy	Law	HBU-Public & Private	Religious Affil (Jesuit, Catholic)	Community & Technical College
Delgado Community College											X
Dillard University				X	X				X		
Loyola University of New Orleans				X	X			X		X	
LSU Health Sciences Center-New Orleans	X		X								
North Shore Technical Community College											X
Nunez Community College											X
Our Lady of Holy Cross College				X	X					X	
River Parishes Community College											X
South Central Louisiana Technical Community College - River Parishes											X
Southeast Louisiana University (SELU)				X							
Southern University in New Orleans				X					X		
Tulane University		X	X	X		X		X			
University of New Orleans	X			X		X					
Xavier University of Louisiana				X			X		X	X	

Source: Eva Klein & Associates

Substantial Collective Scale

Further, although most of the institutions are small, the *collective* higher education enterprise in the region actually is quite large. And, this large scale should be possible to convey to outside audiences, if the institutions and their collective resources are promoted and marketed together. As the institutions develop better mechanisms by which to more effectively pool their intellectual resources for supporting innovation strategies—and (importantly) to compete for acquisition of new resources with which to do so—the more this collective scale becomes not only a marketing image strength, but also the easiest way to leverage growth of accomplishments.

In the table below, statistics of scale include:

- 88,000+ students
- 6,000+ faculty and nearly 11,000 staff (making higher education a significant employment sector in the region)
- Nearly 20,000 degrees and certificates granted annually (for the regional *knowledge workforce*)
- Annual "core" revenues = $2BB+
- Endowment = $1.6BB+
- Annual research expenditures = $280MM+.

At $280MM in combined research expenditures, Greater New Orleans institutions hypothetically fall in the same level/rank as LSU Baton Rouge units and several other large, distinguished public and private research universities. Hypothetically, if the combined research of New Orleans institutions were ranked as a single institution, New Orleans universities would be #75 of the top 100 US research universities (based on 2010 data). This is an argument for collaboration in grant proposals and in marketing.

Exhibit 10—Scale of Higher Education in Greater New Orleans—Selected Statistics provides the details by institution type and by institution.

Greater New Orleans Colleges and Universities—Metrics of Combined Scale: 2011*

SUMMARY—ALL INSTITUTIONS IN GREATER NEW ORLEANS REGION	Subtotals—Private Institutions	Subtotals-Public Senior Institutions	Subtotals—Community & Technical Colleges	Totals—All Institutions
Undergraduate Students	16,258	26,011	32,392	74,661
Graduate & Professional Students	7,468	6,317	N/A	13,785
Total Number of Students	23,726	32,328	32,392	88,446
# Associate Degrees Granted	45	208	1,726	1,979
# Certificates Awarded	N/A	N/A	6,894	6,894
# UG (Bacc.) Degrees Granted	2,491	3,918	N/A	6,409
# Graduate & Professional Degrees Granted	2,598	1,816	N/A	4,414
Total Degrees and Certificates	5,134	5,942	8,620	19,696
Faculty Full Time	1,827	1,700	727	4,254
Faculty Part Time	836	402	553	1,791
Total Faculty	2,663	2,102	1,280	6,045
Staff Full Time	4,313	3,841	671	8,825
Staff Part Time	803	1,123	133	2,059
Total Staff	5,116	4,964	804	10,884
Full Time Equivalent (FTE) All Employees	6,683	5,784	1,627	14,094
$ Core Revenue All Sources 2011 (in $000s)	$1,010,542	$878,618	$169,832	$2,058,992
$ Endowment (inc.Quasi-Endowment) (in $000s)	$1,493,068	$109,433	$3,805	$1,606,306
Research Expenditures 2010 (in $000s) **	$182,562	$97,760	N/A	$280,322

Notes:
* All data, unless otherwise noted, are from IPEDS, US Department of Education, Fall 2011.
**Research expenditures data are from Higher Education Research and Development (HERD) Survey, National Science Foundation, 2010.
N/A = Not Applicable or Not Available in either the IPEDS or HERD databases.

Greater New Orleans Universities Are in Good Company

NSF Rank	Institution	$000s
71	Indiana University-Purdue University-Indianapolis	$296,194
72	University of Tennessee-Knoxville	$291,787
73	Louisiana State University and A&M College	$289,872
74	University of Miami	$280,671
	New Orleans Universities—Hypothetically Combined	$280,322
75	University of Virginia	$276,308
76	University of Kansas	$267,961
77	Rockefeller University	$265,750
	Average for the Above Group including Combined New Orleans	$281,108

Source: HERD Survey, National Science Foundation, 2010

Note: NSF changed its methodology for reporting systems vs. individual campuses for the FY2010 HERD Survey. It is likely that the LSU Baton Rouge figure includes Agriculture, Pennington Research Center, and other units, in addition to A&M College.

LSU Baton Rouge—Research Statistics for Comparative Information Purposes

Finding LSU A&M in the above NSF ranking list sparked some discussion of scale comparisons.

Because NSF changed its manner of reporting institutions (vs. systems) in FY2010 data, and due to some LSU reorganization, LSU A&M College's reported statistics now likely include Agriculture and other units in Baton Rouge that may have been reported separately in the past.

For those who may be interested, *Exhibit 11 LSU A&M College—R&D Expenditures (as One Benchmark)* provides a further breakdown of R&D statistics for LSU by fields and by sub-fields within Life Sciences.

#4—Benefits of Collaboration Embraced by the Universities

EKA has worked in New Orleans since 2006. Based on the university personnel with whom we worked during this study, we are venturing to conclude that there is a new note of understanding about how the institutions may create win-wins through greater collaboration with industry partners.

Not only do the universities appear more uniformly interested in how they might partner (more) with business, industry and government; they also seem to sense the benefits to be gained by more persistent and effective inter-university collaborations. During the Workshops, there were comments to the effect of: *"We have never met together to discuss this before."* Overall, there was significant recognition of the possibilities inherent in stronger, more strategic collaborations. The institutions know, for example, that significant funding opportunities will require regional grant submissions. From our (hopefully correct) observations, the region's universities are, today, more than ever, willing to work in new ways to leverage assets among themselves, with the EDOs, and with company and governmental partners.

In universities, culture and attitudes drive commitments. To the extent that our observations are correct, there is an elevated level of readiness—even eagerness—among the institutions, for collaborating on *"Closing the Loop…."* initiatives and solutions.

#5—Leadership Models in Community Connections and Service Learning Programs

As EKA became more familiar with the institutions via this study, we learned about some of the unique strengths and capabilities of each one. For purposes of this study's subject, we were particularly interested in one feature—university-industry collaborations and, by extension, external focus on connections with community and other regional constituents. Because of the Working Group's desire to focus on Experiential Education, we discussed existing programs and aspirations in the Workshop on that subject.

We observed that all New Orleans institutions focus on aspects of community engagement—each in different ways. In addition, some have well-developed and relatively "organized" service learning and internship programs. (We are not aware of any regional institution that operates a Cooperative Education [Work-Study] Program—an opportunity to be explored.)

Katrina and recent budget cuts have affected the institutions in different ways. For some, like UNO, budget cuts have meant reluctantly-imposed limitations on some of the University's priority engagement activities and programs—like experiential learning. For Tulane University, focus on interactions with New Orleans is a strategic post-Katrina priority.

Overall, Tulane University, Loyola University, and Xavier University are particularly proactive in modeling and enacting service learning activities in the community. In Tulane's case, it is clearly a national leader in this realm among its private, research-intensive university peers.

Perhaps the important point is that service learning and other experiential education models represent an opportunity for enhancing useful university-industry collaborations in a way that is not at all limited to research-performing institutions. Experiential education adds depth to the student's learning experience; helps their employability with "resume" content; keeps faculty in touch with employers of their students; and, in the case of Co-op Education or paid internships, helps students earn money to pay for their education. For some institutions, these supervised experiential/service learning programs also carry degree credit.

In New Orleans, inter-university collaborations can help some institutions borrow models already developed by others. Collaborations also can be a way to greatly strengthen outreach to industry for good placement opportunities and for quality management of these programs.

Expansion of experiential education is the subject of one of this study's recommendations.

4—General Strategy Recommendations

This chapter provides general recommendations relating to two of the Workshops and to the overall objectives of the study. Additional, industry-specific strategies are found in Section 5.

Goals

- **Brand New Orleans for Knowledge and Innovation**. Continue efforts to brand and market New Orleans as a university and research-rich locale (a *college town plus*, or a *knowledge center*, with significant student, faculty, program, research, clinical, and innovation assets)
- **Leverage Scarce Resources**. Leverage and optimize scarce resources for innovation by sharing people resources and costs for certain innovation investments among multiple institutions
- **Enhance Partnering IQ**. More effectively package and market university research capacities and innovation assets to industry, through collaborative initiatives
- **Apply Regional Scale for Federal Grants**. Create scale and evidence of regionalism required to pursue large-scale federal research and innovation grants, and *do* pursue those that seem to be a reasonable fit with collective strengths
- **Create a Front Door**. Provide a default *Front Door* entry point to New Orleans institutions for any person or company that does not find its way directly to a specific institution, program, or faculty member. Make the universities more accessible and user-friendly to industry by establishing a common, shared portal—*Front Door*. The AID is a first step.

Innovation U Workshop—Five Summary Points:

1. Work on creating a consortium
2. Define innovation broadly
3. Capture and include the non-science aspects of innovation
4. Enhance our partnering IQ

Strategies

Following are **General Strategy** recommendations, of which #1 is the major strategy recommendation of this Report. Then, #2 through #10 provide related/supporting strategies.

Strategy #1: Create a University-Led Regional Alliance Organization for Innovation

Form the New Orleans Regional Innovation Alliance (NORIA), as a permanent, active, multi-function university-led consortium to promote innovation collaborations among the universities and between universities, EDOs, and industry in the New Orleans metro region

University Consortia Are Anything But a New Idea

While EKA acknowledges that Strategy #1 may be an aspirational recommendation for New Orleans, and while New Orleans study participants may not consider it an immediately feasible undertaking, the idea of university alliances and consortia actually is anything but new. It is, in fact, a fairly common practice in higher education.

- **Age/Maturity**. University consortia range from very mature to very new. EKA is familiar with several that had their start in the 1960s. One goes back to the late 19th century.
- **Purpose/Mission**. Higher education consortia range in purpose from general purpose collaborations (the older ones, typically) to specific program or research focus (like career development or supercomputing or University Corporation for Atmospheric Research) to those that are focused on aspects of regional economic development (including recent/newer ones).
- **Membership**. The older ones that address core higher education collaborations tend to have only universities as members. Newer consortia/alliances may include university and EDO members—if the purposes are to pursue innovation or community/economic development. In some cases, arts and cultural institutions or freestanding research institutes are members.
- **Geography**. Some consortia are statewide and some are multi-state (usually where urban/metro areas span state boundaries). Many are organized for a metro area (like Greater Washington, DC) or a natural economic region (e.g. Great Lakes Colleges Association).
- **Form of Entity**. Consortia vary in entity form from relatively informal to MOU-based to incorporated. The most mature typically are incorporated, with their own staff and boards.

See *Exhibit 12—Examples of University Consortia*.

Examples of University Consortia

University consortia are formed to support economic development or innovation, or for many other purposes. A few examples:

- Consortium for Education, Research, and Technology of North Louisiana (incorporated)
- University Circle, Inc. (Cleveland)
- Research Triangle Institute (incorporated)
- Life Sciences South Florida (not incorporated)
- University City Science Center (Philadelphia), incorporated
- Consortium of Universities of the Washington Metropolitan Area

Purpose and Membership

Purposes of the NORIA Alliance would be to carry out or coordinate collaborative functions that meet the above five goals in any/all domains/industries of interest and for all external constituents. The universities need a permanent, systematic, and staffed structure through which to facilitate any number of ongoing or one-time initiatives that, collectively, advance any/all of the five goals. The NORIA mandate is intended to be comprehensive and multi-disciplinary—that is, broader than BioSciences, manufacturing, or any single industry sector.

EKA recommends that NORIA would be a university-led organization, but with significant and systemic EDO participation at all levels and industry participation in groups/committees that are focused on their specific issues/needs. General membership in NORIA would be extended to all regional universities and community colleges and to all the region's EDOs.

We elected to recommend this as a university-led entity—rather than a university/EDO-led entity or an EDO-led entity—because it is vitally important that the universities take responsibility for regional leadership of their collective, collaborative efforts. However, the region's EDOs also are core members and engaged in NORIA on permanent councils/committees and in *ad hoc* working groups—varying with the topic. The CEOs of the EDOs would serve on the Steering Committee, along with university presidents/chancellors.

Industry involvement is envisioned to be significant, but primarily at the pragmatic level of industry-focused working groups—rather than in general roles.

Scale for Branding

Greater New Orleans has many universities/colleges, and one of virtually every type, but none is large enough to make a truly competitive footprint in comparisons with larger, globally-competitive urban centers of technology and innovation. NORIA helps achieve "scale."

Leveraging Scarce Resources

None of the universities (public or private) has reason to expect major growth of operating or capital resources in the near future. With so many important, competing budget priorities, progress in innovation functions may depend upon activating collectively the many assets among the institutions—to achieve greater market visibility and to conduct pragmatic innovation-related business functions without replication of all functions at each institution.

A Proposed Organization Structure—Both Real and Virtual: Fitting With and Taking Advantage of Existing Efforts

Overall, NORIA serves as the:

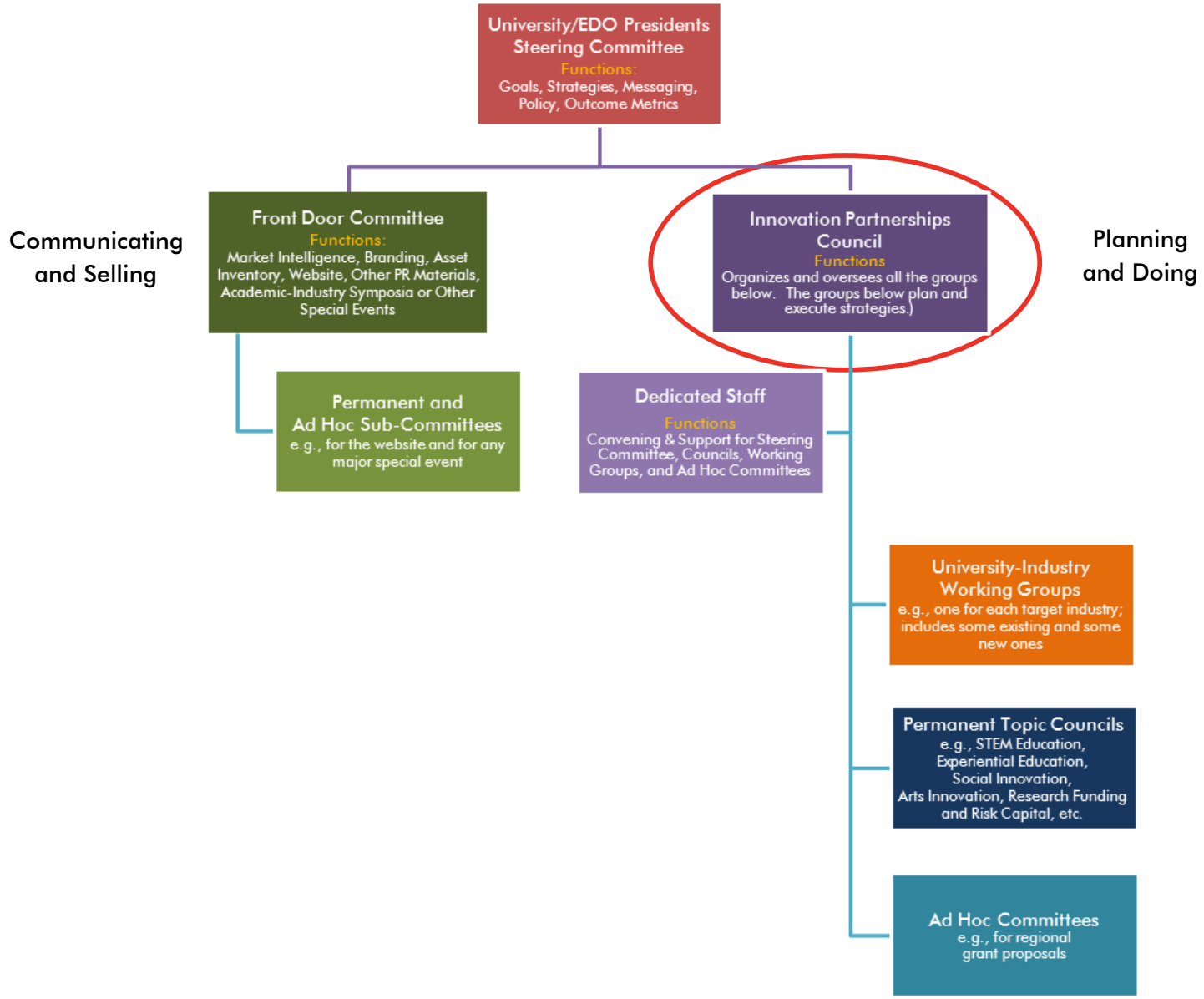
- Leadership agency and collective venue for the presidents/chancellors of the universities and the CEOs of the EDOs
- Leadership locus for setting goals and collection point for data and metrics reporting
- Coordination point for ensuring that multiple industry-specific or other initiatives are in place
- Coordination point for university input into regional marketing/branding efforts of the EDOs
- Source of sustainability for all these efforts.

It is intended to be both a "real" organization and a "virtual" organization.

- The **virtual character** of NORIA is that it works with and through certain other entities, where those entities already exist for innovation missions. For example, NORIA will not create a committee or internal structure for BioSciences; for that industry, NORIA should ensure that collaborations with BioDistrict New Orleans and New Orleans BioInnovation Center are carried out effectively.
- The **real character** of NORIA is in:
  - → Creation of new groups or committees on important topics, where none exists now
  - → Provision of the overall big framework of university-EDO leadership and coordination.

The proposed organization model is shown in the graphic and described below and on the next page.

New Orleans Regional Alliance for Innovation (NORIA):
A Real + Virtual Organization Model



- **Presidents' Steering Committee**. In every discussion during this study, and particularly from the dialogues with outside industry Workshop speakers, it became apparent that the **leadership message** for spurring innovation matters greatly. EKA believes that this NORIA enterprise must be led "**from the message at the top**"—by the presidents, chancellors, and CEOs of the EDOs who, themselves, must meet periodically, to discuss high-level goals and policy directions and, when applicable, make commitments about shared resources. This Steering Committee should be composed of presidents/chancellors of the institutions and CEOs of the participating EDOs.

  Together, this top leadership level would be directly responsible, with staff support, for articulation of goals and big strategies and for overseeing the development of regional metrics for evaluation of outcomes for all NORIA realms of work. The Steering Committee also would receive periodic progress briefings on collaborative initiatives.

- **Innovation Partnerships Council**. This would be a permanent council for the purpose of coordinating the main body of NORIA's work, through three types of groups—permanent industry-focused groups; permanent councils (themes); and *ad hoc* committees, e.g. for specific major regional grant applications.

  The leadership and direction provided by this Council is at the heart of the NORIA mission and the Council should be comprised of senior research, innovation, academic, and external affairs officers, with counterpart high-level EDO representatives.
- **University-Industry Working Groups**. Industry participation in NORIA activities will be mostly in the level of groups that are focused on particular industries. Some industry sub-groups might be achieved by NORIA members joining or supporting already-existing structured entities.
- **Permanent Councils for Topics in Education or Innovation**. There should be permanent councils organized around big education, research, or innovation themes. For example, based on our Workshops, there might be a *NORIA Experiential Education Council*, through which all program managers responsible for cooperative education, internship, and service learning programs would convene to develop and carry out shared activities and services, e.g. an employer training module, shared marketing, shared evaluation expertise, and, possibly, a shared database of placement opportunities. Or, the already existing Career Development Consortium could expand its focus to include greater involvement in experiential education.

  Another example might be the *NORIA STEM^2 Education Council.* In this case, the Council should include representatives from pre-K-12, workforce development boards, and others concerned with core workforce issues, in addition to universities and EDOs.

  Third and fourth examples might be a *Social Innovation Council* and an *Arts Innovation Council.*

  Finally, there might be an EDO-led *Council for Research Funding and Business/Risk Capital*. This would be an EDO group that, with some university participation, would lead major state policy and private sector efforts to create new pools of research/commercialization funds and more sources of risk capital for businesses.

  (All the above is an indicative list, not an exhaustive or definitive prescription.)
- **Ad Hoc Committees**. We envision that these would be convened, as needed, for specific initiatives. An obvious example would be a Committee to develop a specific regional grant proposal. The *Industry Partnerships Council* would convene *ad hoc* committees for initiatives, when/as needed.
- **Front Door Committee**. On the matter of branding and marketing, the AID that was created through this study process will need to be maintained, expanded and put to use aggressively in marketing New Orleans. In truth, the AID is a "first stage product," which not only can be improved but which provides a core around which an entire branding/marketing program can be created. Brochures and other marketing tactics and collateral should be developed. Coordination with the EDOs on branding initiatives is needed. There also needs to be management of a "front door" function (via staff). All these might be functions of the *Front Door Committee*.

  This Committee should be staffed with university relations, corporate relations, and other in the universities engaged in public relations, marketing, websites, etc., and counterpart senior staff from the EDOs. It might have a few sub-committees, such as a Website Subcommittee. It also might designate *ad hoc* committees, when needed, for example, to plan and host an academic-industry symposium for marketing purposes.

The following additional strategy recommendations are more specific than Strategy #1 but each relates to the above over-arching strategy and proposed structure.

Strategy #2: Consider Branding Greater New Orleans with a Name, Like *Innovation Crescent*

It was not within EKA's scope of work to work on branding of Greater New Orleans; this is in the domain of the EDOs and was not part of this study. That said, we cannot resist making a recommendation that we hope will add to the collective branding considerations.

New Orleans sells itself as "fun" and a special place to visit or in which to live. Tourism is central to the economy. Now, the EDOs are striving to brand New Orleans for brains, innovation, and as a business-friendly place. The EDOs might explore the potential for attaching a name or tag line to convey this emerging image. And, in selling New Orleans as a globally competitive place for innovation, the traditional appeal of the place also would remain prominent. Innovation assets and "cool place" make a compelling combination.

Innovation Crescent Georgia

Actually, the word *crescent* already has been claimed by a region of Georgia branding itself as *Innovation Crescent.* See http://www.georgiainnovationcrescent.com/
It might be useful to determine whether this does, or does not, preclude New Orleans from using a term such as *Innovation Crescent.*

Strategy #3: Define *Innovation* Broadly—All Knowledge Disciplines

While it is inevitable that science and technology always will be prominent in regional innovation strategies, EKA likes to insist that innovation is far broader and plays out as well across social sciences, arts/humanities, and effectively, all knowledge disciplines. For example, we began this study with the following definition of *innovation*:

Innovation is the process of applying new knowledge to solve problems or meet unmet user needs. All knowledge disciplines are potentially involved and, if the orientation is problem-solving, then a multidisciplinary focus often is required.

In New Orleans, it should be quite natural to create a broadly defined **Innovation Agenda**—defined to include all knowledge disciplines. The arts are such a prominent feature of the City's heritage. Design and Digital Media/Software were two creativity-intensive industries among the seven industries selected for focus in this study, and the latter, at least, is targeted by the EDOs.

In addition, as mission/vision statements of New Orleans Business Alliance reveal, there is a strong sense of purpose toward resolving longstanding social and socio-economic challenges—to create a City with more equal economic opportunity for all population segments—meaning that social and economic/community innovation also are quite relevant in New Orleans.

EVA KLEIN & ASSOCIATES

Strategy #4: Define *University-Industry Innovation Partnerships* Broadly

14 Universities Among Top 300 Organizations Granted US Patents in 2010		
Rank	IP Owner	# Patents
1	International Business Machines, Inc.	5,866
83	University of California (Regents of)	349
152	Massachusetts Institute of Technology	174
163	Stanford University	155
184	Wisconsin Alumni Research Foundation	136
188	California Institute of Technology	134
199	University of Texas	122
228	Tsinghua University	104
262	University of Illinois	85
269	University of South Florida	83
272	Columbia University	82
286	University of Michigan	78
289	University of Pennsylvania	77
298	Cornell Research Foundation, Inc.	74
301	University of Washington	74

Source: Intellectual Property Owners Association, www.ipo.org, May 25, 2011

Definitively advance past the notion of the last two or three decades that the "innovation" role of universities with industry is exclusively about patenting, licensing, and start-up companies. These are important, but by no means are they the sole avenues for partnerships with industry (or government). Relationship-building and shared win-win efforts in many varied ways are possible.

In fact, patents and licensing, while especially important to the BioSciences industry (at least for molecules and devices), are not necessarily or uniquely what companies want most from universities in all fields of endeavor. Nor are universities major producers of patents. As the table of top patent producers (opposite) indicates, of the top 300 organizations granted US patents in 2010, only 14 were universities (13 US universities). Only one, the entire University of California System, was in the top 100 patent performers.

And, it is equally unrealistic to assume that any university will produce more than a limited number of viable "spin-off" companies. Again, while company formation from university innovation is highly desirable, it is not realistically a high-volume outcome.

In our experience, we find that industry views university innovation contributions quite broadly—starting with informal contacts and including access to their future work force.

The Range of University Roles in Innovation

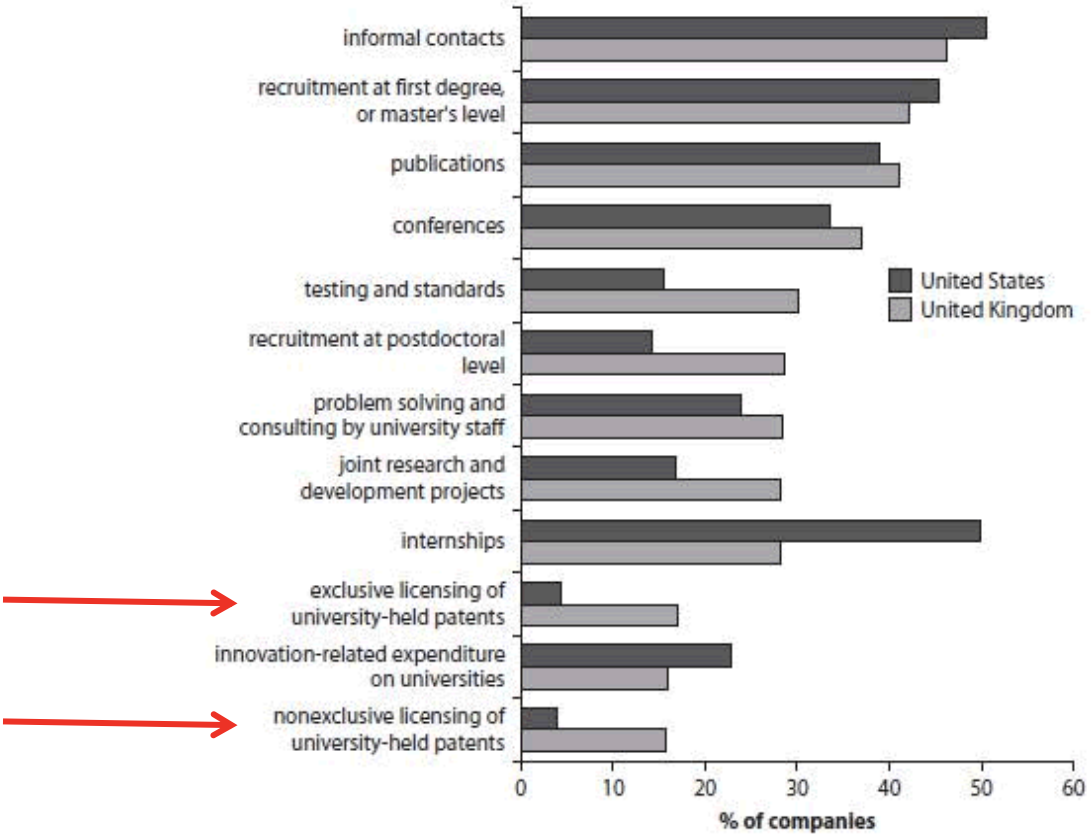
- Educating people
- Providing 'public space'
- Increasing the stock of 'codified' useful knowledge
- Problem-solving

Source: Eva Klein & Associates, Ltd., 2010

Providing "public space" means, for example, that major pharmaceutical companies might be very happy to develop relationships in New Orleans, if the universities invite them to scientific events. Then, the initial event-centered relationships thus formed can lead to more partnering modes.

In the study findings graphic shown below, **exclusive and non-exclusive licensing are at the BOTTOM of the list of ways in which companies say that universities contribute to their innovation.**

Contributions to Innovation of Company Interactions with Universities



Andy Cosh, Alan Hughes, and Richard K. Lester, UK plc: *Just How Innovative Are We? Findings from the Cambridge-MIT Institute International Innovation Benchmarking Project*, Industrial performance Center, Massachusetts Institute of Technology, Working Paper Series, December 2006, page 8. http://web.mit.edu/ipc/publications/pdf/06-009.pdf

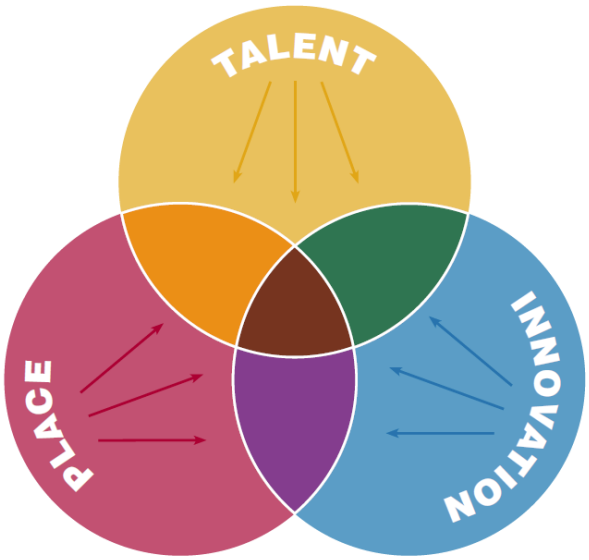
Strategy #5: Create Regional Innovation Metrics (Scorecard) and Monitor Progress

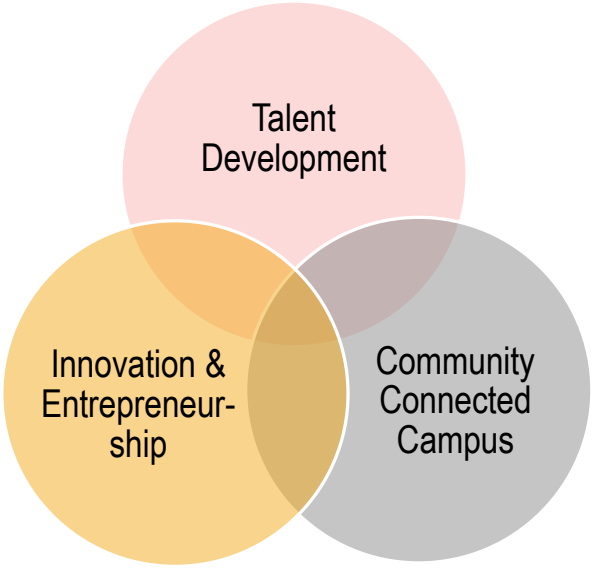
The EDOs and universities, working through the newly proposed NORIA, should jointly define the set of innovation metrics that all the universities and EDOs can adopt as yard sticks by which to measure regional outcomes of common and collaborative efforts. This is a complex undertaking.

We note that at least two higher education associations have undertaken the task of creating metrics for evaluating the impact of universities in innovation and engagement. These are the Association of Public and Land-Grant Universities (APLU) and the University Economic Development Association (UEDA). APLU's work is somewhat more advanced, at present, than that of UEDA. But, both are working to articulate principles of practice, program taxonomies, and outcome metrics for these new university missions. Their working frameworks for program taxonomies and metrics are shown here—APLU's at left and UEDA's at right.

EKA's Direct Involvement

This work of APLU and UEDA is not yet widely distributed. EKA knows about it, because Eva Klein currently chairs the *Body of Knowledge Committee* of UEDA's Board of Directors and is leading UEDA's efforts, with APLU and US EDA, to develop the framework, principles, and metrics of evaluation.





Strategy #6: Explore Three Specific Ideas for Improving University Policies, Culture, and Very Early Stage Funding for Innovation

University cultures are difficult and slow to change. Two factors—policy and leadership message—can serve to broaden notions of what is accepted and what is honored in faculty roles. Funding is always a critical factor and funding for very early-stage exploration of ideas and their applications is most difficult to acquire.

- **Policy Audit**. Are individual institutions willing to review/audit their intellectual property, conflict of interest, conflict of commitment, and faculty evaluation policies to make them more flexible—to support **varied** ways in which productive partnerships with external parties can be accomplished—not just licensing? If collective efforts are critical to success, is there any hope of harmonizing at least some of these policies across the institutions?
- **Leadership Message Refinement**. How can we engage top institutional leadership in buy-in to the big ideas for innovation collaborations? Then, how might we help them frame more effective messaging—internally and externally?
- **Early-Stage Funding for Idea Development or Proof of Concept**. Develop an initiative to raise funds to target very early-stage concepts and proof of concepts. Targets might include industry, EDOs, and state government, possibly with some institutional matching funds. These would be for small-dollar grants to faculty/student groups, with multidisciplinary and multi-institutional projects given some priority. If this is a funding initiative of NORIA, then a special committee would be needed to review applications for funding and make and monitor small grants.

Strategy #7: Improve the Asset Inventory Database and Build Around It a Collective *Front Door* and Marketing Program

- **Make the Database Robust and Create the Website.** Establishing the *Asset Inventory* database was one of two main elements of this study (the other being the Workshops). While a tremendous investment has been made in collecting information and establishing a baseline tool, achieving the real payoff for the universities and the EDOs will require a sustained commitment of additional human and organizational resources—which the NORIA would be ideally suited to provide.

  Further development of the database tool is poised to become the lead initiative for the proposed *Front Door Committee* of NORIA—providing the portal through which electronic visitors may easily and effectively search out the wide array of innovation assets that New Orleans' universities offer to the community and to the world.

  The following steps are required to accomplish further development of the database/website:

  → Register a relevant domain name and obtain a web hosting plan that allows database application

  → Create an online application for the *Asset Inventory* database to allow administrative staff to maintain and the public to view it. Both administrative and public areas can use the same application, except the administrative area will include an additional function that enables staff member(s) to add, edit and delete *Asset Inventory* records. The administrative area also should include user tables where users are allowed to edit only their own institution records. This way, the maintenance of the database is done and distributed among the institutions.

  → Both the administrative and the user (public) sites should support the following functionalities:

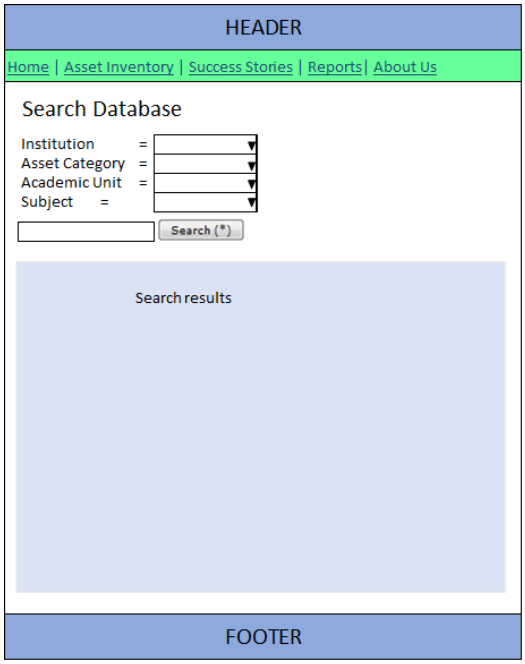
  - Filter function (by institution, asset category, academic unit, subject, and industry fields)
  - Search function (based on "description", "URL", and "contact fields"). We also recommend creating an additional "Keyword" field to make the search function more efficient.
  - Export function to enable search results to be exported into Excel, Word, or PDF format.

  → Add features to support Search Engine Optimization

  → Determine how each of the partner institutions will connect to the *Asset Inventory* database and help to promote its brand through a common protocol for identifying and accessing the new website

  → Coordinate with partner institutions to show the *Asset Inventory* database on their website through IFrame code

  → The *Success Stories* component being developed will need to be added to the website.



Basic layout suggestion for user's website.

- **Build a Marketing Program Around the *Asset Inventory*.** Use the *Asset Inventory* as the first step toward creation of a more robust marketing program, by which to promote the collective intellectual and innovation assets of New Orleans universities. For consideration:

  → Brochures and other print materials

  → How to use print and electronic materials in EDO marketing?

  → Should there be special events to feature selected programs, assets?

- **Create an Innovation Partnerships Awards Program—for Faculty and Students.** Evaluate local/regional awards programs already in place and determine if an awards program that is aimed at faculty and students who engage in successful innovation partnership activities, particularly with industry or social/public/community organization partners, is a good idea. It could be useful to have industry and community people serve as some or all of the judges of the competition. It is even possible that industry groups might fund such an award program.

Check for Award Program Duplication

We are aware that the Louisiana Technology Council runs an awards program for innovative companies. There are undoubtedly other awards programs to consider. Determine whether or not a program of this type would be duplicative.

Strategy #8: Evaluate and Pursue Big Grant Applications

Under new policy directions, federal research funding increasingly is being channeled through large-scale, multi-disciplinary grants with partnership requirements that *require* multi-institutional collaboration on a regional or even national basis.

During this project's NCAM Workshop, there was discussion of one particular federal initiative—*National Networks for Manufacturing Initiatives* (NNMI). We believe it was mentioned that NOLA area universities are contemplating a submission to this very important program. $STEM^2$ education will be a critical component—making it necessary to work quickly on a $STEM^2$ Program Inventory and on NCAM's and other institution future $STEM^2$ plans.

The **BioSciences** area shows similar opportunities. If the President gets his way, there may be a national Human Brain project—to map activities of the brain—on a scale similar to the Human Genome Project.

NIH is issuing an increasing number of its grant solicitations in the form of "translational research" projects or centers.

Other federal agencies, led by US EDA, are targeting Regional Innovation Clusters (RICs) and entrepreneurship development.

Examples of new federal initiatives include:

- NSF just announced a major expansion of its Innovation Corps program, "I-Corps", to teach NSF-funded university researchers how to build profitable start-ups around their technologies.
- NIH Centers for Accelerated Innovations (NCAI) (1) solicit and select promising emerging technologies, such as therapeutics (e.g., drugs, biologics), preventatives, diagnostics, devices, tools, etc. and (2) facilitate their translation to commercialized products that improve patient care and enhance health.
- NIH project and center grants for large, multi-project efforts generally include a diverse array of research activities.

Exhibit 13—Examples of Federal Grant Opportunities provides more information on selected major grant programs. (*Exhibit 13* is illustrative and is not meant to be exhaustive. Nor has EKA evaluated which federal opportunities may be feasible or best suited to New Orleans.)

Via NORIA, the institutions should determine whether and how to pursue such major grant opportunities. In assessing potential, consider non-local Louisiana resources, as well as partnering with institutions in other states. Certainly, even with non-New Orleans partners, not all will represent good opportunities for New Orleans, but there should be a systematic way to evaluate all these new programs, as they are introduced, and to set in motion grant development (i.e., designate *ad hoc* grant committees) for those that are appropriate to pursue.

Big initiatives must be both bottom-up and top-down. Connecting into grant teams with other universities depends greatly on professional relationships of local faculty. On the other hand, many of these big initiatives might not materialize without some top-down driving of the idea and organizing of the participants. This would be a particularly important function for NORIA.

Strategy #9: Expand Experiential Education as a Critical Workforce Development Tool and as a Form of Industry Partnerships

Whether structured as internships, cooperative education/work-study, or service learning assignments, it is patently clear that "experiential education" is a win-win-win—for learners, for institutions, and for future employers of students/graduates. In the Workshop dedicated to this subject, participants learned that most of the institutions have some form of experiential education programs, but few are sufficiently well-developed to meet the potential demand or interest by both students and employers. And few of the institutions have programs that are aligned with degree requirements and that are centrally-managed. None have Co-op.

Existing Career Development Consortium

Although this recommendation is written to suggest a new Experiential Education Council, as noted elsewhere, it might prove much better to engage the existing Career Development Consortium in considering expansion of its activities.

While this is too complex a subject for elaboration of solutions in this Report, EKA urges the institutions to mobilize an Experiential Education Council as part of NORIA, and to task that group with sharing information, program models, and ideas for how to scale up these very vital programs in New Orleans. Institutions that do not grant credit for (properly supervised and evaluated) experiential learning can learn how from those that do now grant degree credit. Collectively, perhaps a "manual" for host companies can be created—to delineate expectations of all parties. Perhaps it is even possible to pool resources ("job bank") for job/internship placements. Finally, institutions can explore ways to tap the versatility of federal Work Study funds.

Then, aggressively market this experiential education feature of higher education in New Orleans, as employing companies are very receptive to it. Also, once these placements form the initial basis of company relationships, then these relationships, with attention and coordination, may be possible to leverage into other forms of partnerships or fundraising.

Exhibit 14—Experiential Education Resource Information provides organizations/websites.

Strategy #10: Use the Workshop Model as a Tool to Launch Discussions of Additional Topics, Themes, and Industry-University Partnership Initiatives

Consider organizing more short-format Workshops on topics relating to other industries of interest; use them as a way of developing the focus for NORIA's Industry Working Groups.

The Workshop model used in this study proved to be a simple, straightforward, and productive means for engaging participants and highlighting opportunities for improving the innovation eco-system in New Orleans. Obviously, topics addressed were far too complex to be resolved in a single meeting. But, what the Workshops did fairly effectively was bring into the spotlight areas in which collaborative models can be developed—with more work. Of necessity, recent Workshops were limited in topic coverage.

5—Industry-Specific Strategy Recommendations

Biosciences—Goals

From this Workshop, goals for New Orleans institutions with BioSciences interests are:

- **Scale Up**. Like the Cancer Center, find one or two other niches in which to collaborate much more strategically and purposefully—to become "bigger." Neurosciences provide one example. Drug discovery/development provides another. (Niche selection is beyond EKA's capabilities.)
- **Build Relationships and Get Noticed**. Promote capabilities and "make friends" (beyond New Orleans) much more aggressively and effectively
- **Tweak the Culture**. Establish leadership messages to broaden the range of accepted realms of faculty accomplishment (to include *varied forms* of industry partnerships—not just patenting).

Key Themes

Partnership must be about win-win for all involved. No zero-sum games.

To get win-win, you have to find out what the other guy needs.

It's not always about formal licensing. It's about relationships. So, ask big pharma for people, not money.

If a company funds 50 of 10,000 ideas, then who you know and when you drop your idea into the mix matter greatly.

Biosciences—Recommendations

Strategy BIO #1: Strengthen Market Intelligence-Gathering, Adopt "Relationship Marketing" Tactics, and Establish New Orleans as a "Player" in BioSciences

- **Big International BioSciences Events**. Organize among the institutions for someone from New Orleans to attend the major annual events—at least BIO, AUTM, and JP Morgan's events. Pool resources, if possible, to create a New Orleans exhibit. At these events, make meeting people a priority, keep extensive contact notes, then plan and execute follow-up communications.
- **Market Intelligence—Big Pharma/Company Websites**. Assign to someone the task of systematically combing through big pharma and other relevant websites and press coverage for market intelligence gathering and share the information among the universities and EDOs.
- **A New Orleans Showcase Annual Event—Thought Leadership in BioSciences**. Design an annual event by which to establish that New Orleans is a "player" in national/global BioSciences and to showcase major local capabilities. Include industry and university participants, including universities and companies from elsewhere. Focus the event on a scientific content agenda, perhaps followed by a tour of a local facility. As a secondary objective, include some deal presentations.

Strategy BIO #2: Continue to Strengthen BioFund and Acquire Proof-of-Concept Funds

Strategy #6 (above) describes early-stage, proof of concept funding for researchers. NORIA would raise funds explicitly for very early, proof-of-concept funding (before intellectual property has proven its value or a company is formed) and award small grants to research groups in and across the universities. Although the intent of Strategy #6 is that these mini-grants might be available for any disciplines, small early grants would be especially useful for BioSciences.

Also and specifically for BioSciences, help NOBIC expand the BioFund. Consider adding national pharma/BioSciences industry representatives to its governance.

Proposed MediFund

The establishment of a MediFund, as proposed by GNO, Inc., and up for consideration this legislative session, would provide for competitive grants for biomedical research to be conducted in Louisiana.

This fund would allow New Orleans to compete on a national and global scale and encourage further investment in BioSciences in the region.

Strategy BIO #3: Find One or Two Niches for Scaling Up Competitiveness of BioSciences Capacities with Significant Funding for Niche Investment

Following are examples that emerged in the Workshop discussion; other ideas are possible.

- **Clinical Trials**. What can be done to significantly expand and coordinate Clinical Trials capabilities—to attract more big pharma relationships (e.g. a Clinical Research Organization)?
- **Drug Discovery Center**. How can resources be shared to significantly increase collective focus on Drug Discovery and Development (i.e., an actual or virtual Drug Development Center)?
- **Health-Related Information Technologies**. Do we have the right capabilities on which to build a globally competitive niche of excellence in this big and growing field?

For any new niche that is selected for priority focus, new, large-scale funding may be needed.

Coastal Stabilization and Water Management—Goals

- **Alignment of Capabilities and Interests**. Discover matches of needs and capabilities between industry and universities and build upon those systematically
- **Mutual Industry-University Advocacy for Policy and Funding**. Mutually advocate for contracting changes and specific research/innovation funding initiatives at the state level
- **State Master Plan "Louisiana 2012 Coastal Master Plan" and the Louisiana Coastal Protection and Restoration Authority (CPRA) Frameworks**. Work with these two frameworks in the short run and to change them in the long run, with innovations that improve outcomes, lower costs, and expand business opportunities, combined with policy advocacy
- **Place Strategy**. Agree that Tulane's Riverfront Campus provides a *place strategy* component for these industry-university collaborations—where universities and industry can set up shop for conducting projects—even short-term.

Key Themes

Industry and universities need to discover and align capabilities; pick priorities; and get to work.

State contracting is problematic—but may be an opportunity for joint efforts

There are clearly short-term and longer-term aspects to these initiatives

Long-term market opportunities for local companies can be greatly aided by the national and global reach of the universities.

Coastal Stabilization and Water Management—Recommendations

Strategy CR #1: Establish an Organizational Vehicle for Ongoing Planning and Oversight of Collaborative Projects

- **A "University Council" of Coast Builders Coalition (CBC)**. Create an organizational mechanism by which university scientists and industry communicate regularly, to plan and monitor collaborative initiatives. As CBC already exists, CBC could determine how to invite and convene the designated university participants with industry members on some regular basis, with orderly agendas, to plan and monitor activities—perhaps as a "University Council" to the CBC. If this occurs, the universities should identify all senior academic personnel who are pertinent to Coastal Stabilization/Water Management technologies.

How Should the Universities Work with CBC and its Members?

In some fashion, CBC could answer the question posed to it by the universities in the Workshop:

Should the universities work through CBC, or with individual companies, or through economic development organizations, or all three ways?

Strategy CR #2: Select/Develop Applied Innovation Projects—Immediate and Longer Term

- **An Immediate Project or Two**. Using the *Louisiana Coastal Master Plan*, develop one or two immediate innovation initiatives for which there is both industry interest and university capacity. Get to work on them now. Among other purposes, picking something to work on right away will provide an opportunity to test how to structure these relationships.
- **Mini-Business Plan for Innovation Projects (Longer-Term)**. Designate a small industry-university "work group," to work on selecting best additional opportunities to pursue in connection with the *Louisiana Coastal Master Plan*, the RESTORE Act, and other contexts. Select priorities based on a combination of industry needs and university capabilities.

Strategy CR #3: Develop and Carry Out Policy, Contracting, and Funding Advocacy

- **State Contracting and Innovation Funding Advocacy**. Develop a state advocacy agenda:
  - → Universities lend efforts to help the companies obtain changes in the contracting process
  - → Companies lend efforts to obtain specific funding for Coastal Stabilization/Water Management efforts of the universities, with their CBC partners.
- **Funding for Coastal Stabilization Innovation Projects**. For the Mini-Business Plan, develop a pool of funds that can be applied to high-priority innovation projects. Perhaps, CBC can raise some cash funding and universities can contribute budgeted time/effort. Determine if state funds from existing funding programs or via a special appropriation can be part of funding. An industry-university committee should decide to which projects special funding should be applied.
- **Army Corps of Engineers and Federal Policy**. Continue and expand work with others on a national level to influence changes in the Corps' practices—up to and including Act(s) of Congress. EDOs and trade organizations could lead national partnering efforts.
- **University National Contact Networks for Market Intelligence**. Universities should seek to use their out-of-state relationships and networks, to enhance CBC's understanding of what is going on elsewhere, that is, what has been tried and works (or does not work) in other regions. This would help local companies in marketing themselves to other regions.

Advanced Manufacturing—Goals

From this Workshop, which focused specifically on NCAM and STEM^2 Education, goals for New Orleans institutions with Advanced Manufacturing interests are:

- **Understand Existing STEM^2 Initiatives in the Region**. Discover and catalog STEM^2 initiatives already in place—for two types of programs—(1) those that cultivate motivation and (2) those that teach content and skills.
- **Design NCAM's STEM^2 Programs**. In context of pre-K-12, higher education, and other existing initiatives, support UNO in determining what NCAM's STEM^2 focus should be
- **Pool Resources to Cultivate Selected Niches in Advanced Manufacturing Innovation**. Perhaps using NCAM as the organizing device, and based on regional institution strengths and the local industry base, develop niches to pursue collaboratively in research/ development in Advanced Manufacturing technologies.

Key Themes

There are many STEM^2 initiatives already in place in K-12, higher education, and sponsored by still other entities. Comprehensive knowledge of what already exists and a commonly adopted set of metrics to gauge progress seem to be two missing elements.

For NCAM, due to NASA's priorities, STEM^2 accomplishments are especially important. However, NCAM should develop its STEM^2 approaches in context of what others already are doing.

Not addressed in this Workshop was the matter of how to improve niche focus of research/development activities in Advanced Manufacturing. This should be "on the agenda" of NCAM and the institutions.

Advanced Manufacturing—Recommendations

Strategy AM #1: Inventory Existing STEM^2 Programs and Design Regional STEM^2 Metrics

- **Support or Join Louisiana Technology Council Effort to Inventory STEM^2 Programs**. As a first order of business, NCAM should determine if the LA Technology Council's inventory will supply needed information and if/how the NCAM participants can augment or support that project. (EKA Note: We have little information about this LTC effort. It needs to be considered.)
- **Agree on Regional STEM^2 Metrics to Track Outcomes and Collective Impact of Multiple Programs**. Establish an agreed-upon "dashboard" or "report card" of metrics that all the institutions involved with STEM^2 can agree upon as **common outcome metrics** they all are trying, in various ways, to improve/affect. This cannot be a set of outcomes measured separately by each school district, university, program, etc. (See Strategy AM #2)

Strategy AM #2: Collaborate to Help NCAM Develop its STEM^2 Plan and to Support Delgado's US Navy Grant Program

- **Engage a Working Group to Support UNO in Designing NCAM's STEM^2 Plan and to Determine How to Assist Delgado with its Navy-funded Initiative**. Include all the universities, NASA, K-12 STEM^2 leadership, etc. Hopefully with an inventory of existing STEM^2 programs and a new set of Metrics in hand, create an ad hoc working group to help NCAM develop its plans for STEM^2 education. (Perhaps one role of NCAM could be to develop the metrics and gain regional acceptance; maintain monitoring; etc.)

Strategy AM #3: Organize to Plan Regional Research/Development Niches and Collaborations in Advanced Manufacturing

- **Plan an NNMI Grant Application**. Convene an ad hoc working group to explore the NNMI opportunity and develop a grant proposal. This will require dialogue about niches of competency that exist and that can be built upon in technologies for Advanced Manufacturing among the institutions and industry base.

Strategic Change
Operations Planning
Business Planning

6—Implementation Considerations and Next Steps

Implementation Considerations

Form of Entity and Funding

NORIA eventually should be incorporated, but it certainly may need to begin less formally. We suggest developing a *Memorandum of Understanding* which the members would sign, as an initial form of organization. This technique has been used successfully elsewhere, and often leads to a more formal, incorporated structure later on, when there is momentum and when the justification for a more formal structure becomes apparent to participants.

It is possible that the RPC may be able to fund some initial efforts from its Regional Innovation Center grant. Membership dues, even at a modest level and perhaps only enough to indicate seriousness of intent, should be an early strategy that is considered. Eventually, grant and other income will be necessary. Funding ultimately should be a combination of dues, corporate contributions, and grants. There may even be the potential for earned revenues.

Staff

It seems unlikely that an organizational structure of the complexity needed to manage the envisioned range of collaborations and scale-up activities could be operated without dedicated staff. To take first steps, however, some means must be found to provide temporary staffing or a loaned staff person. This is a role that might be played by the RPC, GNO, Inc. and other EDOs. While temporary, borrowed staff may be the way to start, eventually a small dedicated NORIA staff (e.g. director and administrative assistant) seems pragmatically necessary. Other staff time/effort will be contributed by institutions, based on faculty/staff participation in NORIA.

Jumping on a Moving Train

NORIA is NOT intended to replicate groups or venues for collaboration that already are in existence, but, rather, should work with and through such groups. NORIA should create new groups only for industry targets or innovation subjects where none exists. Some examples of working through existing organizations/structures follow:

- **Commercialization Capacity Augmentation**. Some institutions have, and will continue to provide, internal commercialization resources, but all agree that some form of collaborative augmentation of these capacities could be useful. Via NORIA, expansion of commercialization capacity/support could be assigned to New Orleans BioInnovation Center (NOBIC), which already has some capabilities and activities in commercialization. For these activities, that are intended to extend (not replace) the resources of the individual institutions, NORIA's roles would be to help NOBIC acquire permanent, hard funding for these activities; to provide an Advisory Council (if needed), or otherwise have serious input to the nature of services provided; and perhaps to contribute annually to funding the operations. In return, NOBIC would have resources to support/augment IP/ commercialization activities for all the institutions—especially those whose level of activity does not justify internal stand-alone staff capabilities.
- **BioSciences Marketing**. BioDistrict New Orleans already is the lead agency for marketing on a large scale to recruit BioSciences assets to New Orleans. Some, but not all, NORIA members are on the BioDistrict Board. NORIA could ensure that institution members participate, when/as needed, in marketing/recruitment activities undertaken or directed by BioDistrict.
- **Experiential Education and the Existing Career Development Consortium**. In the NORIA model, an example of a permanent council is the Experiential Education Council. Subsequent to the Workshops, EKA learned that New Orleans has a consortium for Career Development which, among other things, hosts Career Fairs. Most of the senior institutions have participated. Pre-Katrina, this Consortium also provided training for employers in working with students. This is another example of using an existing group, rather than forming a new one. It may be merely a matter of updating the membership and the focus areas of the existing consortium.

- **Collaboration via Existing Industry Groups, e.g., Coast Builders Coalition.** The organization model proposed for NORIA suggests that there should be an industry-university-EDO group to work on each major industry of interest—and that these would be created or coordinated under NORIA's *Innovation Partnerships Council.* However, loci for such groups already exist in some cases. For Coastal Stabilization/Water Management, there already is the existing industry group, the CBC. For this industry, instead of forming an entirely new NORIA council, the obviously preferable route would be to determine, with CBC, how the university researchers and program directors focused on this industry can connect with the CBC organization. One way might be via an Advisory Council of university people, as described above.

Thus, where an existing group already exists to address issues of industry-university and inter-university collaboration, those groups become a **virtual, coordination function of** NORIA.

Suggested Next Steps

Following is list of early/next steps. It is provided for consideration, and actions are not necessarily listed in sequential order. This list assumes (1) distribution of the *Closing the Loop* report; (2) additional activity of the study's Working Group until NORIA groups are formed; and (3) staff roles or some form of start-up support provided by/via the RPC, GNO, Inc. and other EDOs, for an interim period.

- **High-Level Champion(s).** Identify a high-level champion or two among the institutions and EDOs who can actively help "sell" the NORIA strategy and other recommendations to others
- **Buy-In and Determination of Regional Participants.** Distribute the final study report to institutional and EDO participants and follow-up with leadership of each, to ascertain the extent of buy-in, especially for the NORIA recommendation and for related *General Recommendations*—with the identified champion(s) leading communications, where necessary:
  - → For institutions that participated in the study, work through the Working Group members, and seek to build support at the President/Chancellor level
  - → For EDO participants that were less active, conduct follow ups to ascertain interest
  - → Determine what additional academic institutions and/or EDOs should be invited to be part of implementation (based on distribution and presentations of the study)
  - → Continue seeking support and commitments as other early implementation begins
- **Memorandum of Understanding (MOU) and Further NORIA Organization Elements.** Draft an MOU and seek signatures of those institutions and EDOs identified above. Begin development of an initial Work Plan for NORIA. An interim staff solution is most critical.
- **Start-Up Funding Potential.** Scan possible sources of start-up funding, including dues, grants, contributed staff time, etc. and pursue initial funding.
- **Grant Applications.** As grant opportunities are identified—whether for core NORIA funding or for specific innovation activities—form working groups to which to assign development of these grants, and pursue them.
- **Greater Details re: Existing Groups and New NORIA Groups.** Develop a more detailed version of organization, to establish more clearly the already-existing industry or topic groups (and how they might support overall objectives). Define those that need to be formed anew.
- **Website, Communications Strategy, and Front Door Committee.** Register the domain and develop the initial form of the NORIA website, using the AID as its first content component. Appoint the Front Door Committee, to begin development of other elements of the website and Market Strategy.
- **Other Low-Hanging Fruit.** Select a few recommendations that might be relatively easy to launch (because they already are, or should be, in motion or could be launched fairly easily). Encourage these activities.

7 —Exhibits

7—Exhibits

Exhibit 1—Recent Media Coverage of New Orleans and Innovation

MEDIA COVERAGE

Over the past 24 months, the Greater New Orleans region has become the focus of numerous stories by business writers for national publications. From its growing film and digital media industries to entrepreneurship and a friendly business climate, the area has become a model for other cities to study.

NEWS CLIPPINGS

Why New Orleans Is The New Frontier For Entrepreneurship And Innovation
Written by Liz Walsh of psfk on December 13, 2011
http://www.psfk.com/2011/12/why-new-orleans-is-the-new-frontier-for-entrepreneurship-and-innovation.html

As Filmmaking Surges, New Orleans Becoming Serious Challenger To L.A.
Written by Joel Kotkin for Forbes on April 20, 2012
http://www.forbes.com/sites/joelkotkin/2012/04/20/as-filmmaking-surges-new-orleans-becoming-serious-challenger-to-l-a/

A Digital Tip Jar and More Apps for New Orleans Crowds
Written by John Tozzi of Bloomberg Businessweek on January 31, 2013
http://www.businessweek.com/articles/2013-01-31/a-digital-tip-jar-and-more-apps-for-new-orleans-crowds

The Rise of the Third Coast
Written by Joel Kotkin for New Geography on November 15, 2012
http://www.newgeography.com/content/003230-the-rise-third-coast

America's New Frontier For Business Opportunity
Written by Adriana Lopez for Forbes on January 3, 2013
http://www.forbes.com/sites/adrianalopez/2013/01/03/americas-new-frontier-for-business-opportunity/

In Katrina's shadow, New Orleans' startups take flight
Written by Summer Suleiman of CNN on December 5, 2012
http://www.cnn.com/2012/12/05/tech/innovation/new-orleans-startups/index.html

New Orleans touts its new status as a "brain magnet"
Written by John Snell of WVUE Fox 8 on February 1, 2013
http://www.fox8live.com/story/20937348/new-orleans-touts-its-new-status-as-a-brain-magnet

greater new orleans inc regional economic alliance

Greater New Orleans, Inc.
365 Canal Street, Suite 2300, New Orleans, LA 70130

Phone: 504.527.6900 Fax: 504.527.6970
www.gnoinc.org @GNOinc info@gnoinc.org

Exhibit 2—Working Group Members

From March 2012 through February 2013, there were some membership changes. As of January/February 2013, when this report was created, members were:

BioDistrict	James McNamara, Executive Director
Delgado Community College	Kathleen Mix, then Larissa Littleton-Steib, Vice Chancellor
Dillard University	Theodore Callier, Vice President for Research & Sponsored Programs
	Karen Bailey, Sponsored Research Associate
Louisiana Economic Development	Quentin Messer, Director of State Economic Competiveness
	Sarah Vanden Broek, Senior Analyst, State Economic Competiveness
LSU Health Sciences Center-NO	Joseph Moerschbaecher, Vice Chancellor of Research
	Patrick Reed, Director, Office of Technology Management
Louisiana Technology Council	Rick Koubek, Dean of Engineering at LSU
Loyola University	Heidi Davis, Director of Grants & Sponsored Programs
Greater New Orleans, Inc.	Robin Barnes, Executive Vice President
	Jana Sikdar, Educational Liaison
Jefferson Economic Development Corporation	Jerry Bologna, Executive Director
New Orleans BioInnovation Center	Aaron Miscenich, Executive Director
New Orleans Business Alliance	Melissa Ehlinger, Senior Research Analyst
St. Tammany Economic Development Foundation	Brenda Reine, Executive Director
Southeastern Louisiana University	Tammy Bourg, Provost & Vice President for Academic Affairs
Southern University New Orleans	David Adegboye, Vice Chancellor for Academic Affairs
Tulane University	John Christie, Executive Director, Office of Tech Transfer & Intellectual Property Development
University of New Orleans	Steven Johnson, Interim Vice President for Research & Economic Development
Xavier University	Gene D'Amour, Senior Vice President for Research & Sponsored Programs
	Rachel Cruthirds, Assistant Vice President for Resource Development

Exhibit 3—Stakeholder Organizations

Economic Development Organizations

With the RPC as sponsor/client, GNO, Inc. and city/parish-level EDOs participated in this study.

The Regional Planning Commission (RPC) for Jefferson, Orleans, Plaquemines, St. Bernard and St. Tammany Parishes focuses on regional transportation, economic development, and environmental planning for the five-parish region. The RPC is a federally designated Metropolitan Planning Organization. The RPC brings together local governments, elected officials, transportation authorities, citizens and other interested persons and organizations to develop comprehensive plans that reflect the area's vision for the future.

The RPC is the local Economic Development District designated by the US Economic Development Administration (EDA) and is responsible for the Comprehensive Economic Development Strategy (CEDS), a 5 year strategy document designed to bring together the public and private sectors in the creation of an economic roadmap to diversify and strengthen the region's economy. Projects seeking financial assistance from the EDA must demonstrate how the investment addresses the goals and objectives outlined in the CEDS. The document provides an overview of economic conditions in the region including: population, geography, workforce, transportation access, resources, and environment, as well as the identification and analysis of traditional and emerging industry clusters of significance. The CEDS strategy committee develops broad-based regional goals and objectives which result in a plan of action for economic growth. The work presented in this report informs the development of the CEDS.

Greater New Orleans, Inc. (GNO, Inc.) is a regional economic development alliance serving the 10-parish region of Southeast Louisiana. GNO, Inc.'s region is composed of the parishes of Jefferson, Orleans, Plaquemines, St. Bernard, St. Charles, St. James, St. John, St. Tammany, Tangipahoa, and Washington. Its vision is for the Greater New Orleans region to fulfill its potential as one of the best places in the country to grow a company and raise a family. Its mission is to serve as the catalyst for wealth creation in the 10-parish region of Southeastern Louisiana. GNO, Inc. works to accomplish this by an aggressive agenda of business development—marketing the region; and product development—improving regional business conditions through policy, workforce, education and research initiatives. The ultimate indication of success for GNO, Inc. will be the presence of a robust and growing middle class in Southeastern Louisiana.

New Orleans Business Alliance (NOLA BA) is the official non-profit organization tasked with leading economic development initiatives for the City of New Orleans. NOLA BA is a public-private partnership between the City of New Orleans and private investors from the local community. NOLA BA's vision is to reposition New Orleans as the next great American city for business investment, quality of life, and economic opportunity. Its mission is to unite a diverse community of stakeholders to catalyze job growth, create wealth, and build an equitable and sustainable economic future for the *new* New Orleans.

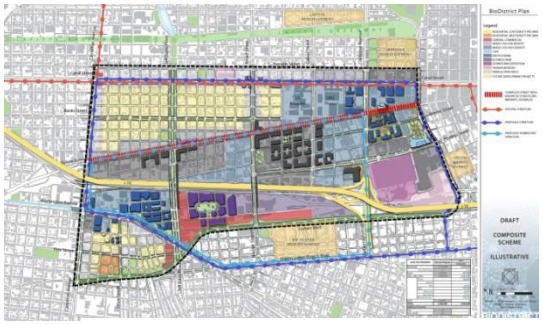
The **Jefferson Parish Economic Development Commission (JEDCO)** is an independent, complementary arm of Jefferson Parish government, with the main objective of attracting, growing, and creating new business. JEDCO's mission is to proactively influence the economy through retention and creation of quality jobs, entrepreneurship, and investment in Jefferson Parish. Since its inception in 1987, JEDCO has aided thousands of companies through business incubator and loan programs, tax incentives and rebate programs, workforce development, and information services. JEDCO also pursues quality of life initiatives.

The **St. Tammany Economic Development Foundation (STEDF)**, a non-profit corporation and politically unaffiliated, is recognized as the lead economic development organization for St. Tammany Parish. The organization is charged with retaining and attracting business and employment opportunities. STEDF seeks to improve the quality of life in the parish by strengthening and supporting the business climate in the region.

Two Biosciences EDOs

In addition, two special-purpose EDOs in New Orleans, both dedicated to development of Biosciences, were part of the client stakeholder organization for this study.

BioDistrict New Orleans is a state-enabled economic development district (with taxing and bonding authority) that was created by the State of Louisiana in 2005 and charged with the responsibility of growing both the programmatic and physical development components of the biosciences sector of the New Orleans economy. The 1,500-acre district spans the downtown and Mid-City areas of New Orleans, bounded by Earhart Boulevard, Carrollton Avenue, Loyola Avenue and Iberville Street. The BioDistrict is focused on the development of a biosciences industry in New Orleans that will provide world-class biosciences research and development; local, regional, and global healthcare delivery; and stable, high-paying jobs for professionals, managers and workers representing a wide range of skills. Through partnerships among major educational and research institutions, private companies, government agencies and independent foundations, BioDistrict New Orleans creates opportunities for workforce training and research needed to build a successful biosciences industry.



BioDistrict text and image at http://biodistrictneworleans.org/about/

The BioDistrict Board of Commissioners is comprised of 15 members, including representatives from each of the major academic and medical institutions, including Xavier University, Delgado Community College, Louisiana State University, Tulane University, and Ochsner Health System. The Board also includes four appointments from the Governor of Louisiana and one from the Department of Louisiana Economic Development (LED). In addition, the Mayor of New Orleans has three appointments representing individuals from GNO, Inc., the New Orleans Chamber of Commerce, The Business Council of New Orleans and the River Region, and a seat for the Mayor at Large.

New Orleans BioInnovation Center (NOBIC) is the place for innovating and developing tomorrow's advances in life science technologies. The Center's experienced team develops programming and applications for promoting and realizing ideas that will improve the quality of life for millions. The Center offers pre-startups, startups and growing life science companies unparalleled access to the area's leading researchers, state of the art wet lab spaces, and business resources for commercializing biotechnology.

BioInnovation Center text and image at http://www.neworleansbio.com/

The Board includes senior representatives of LSU Health Sciences Center in New Orleans, Tulane University, and Xavier University, and private sector leaders. Governmental partners include the State of Louisiana, Louisiana Economic Development, and the US Economic Development Administration.

The New Orleans BioInnovation Center facility houses a new generation of innovators from Louisiana's burgeoning Life Science Community. Situated between the Greater New Orleans Biosciences Economic Development District and the New Orleans Medical District, on the 1400 block of Canal, the Center offers 66,000 SF of state of the art wet-lab, office and conference space. Designed to cultivate and conceive new ideas for bio-innovation, the Center exists among a community made up of hospitals, medical universities, research centers and biotech businesses—in the emerging BioDistrict. The Center can house dozens of companies, providing infrastructure to support day-to-day functions of company research and business.

State Level Stakeholders

The Working Group also included representatives of two statewide entities—Louisiana Economic Development (LED) and the Louisiana Technology Council (LTC).

Louisiana Economic Development

LED is an agency of the State of Louisiana. It is responsible for strengthening the state's business environment and creating a more vibrant Louisiana economy.

Vision: To reposition Louisiana as the next great American state for business investment, quality of life and economic opportunity.

Mission: To lead economic development for the state of Louisiana.

To position Louisiana for greater economic success, LED is aggressively pursuing eight integrated economic development strategies:

- Increase state economic competitiveness
- Cultivate top regional economic development assets
- Enhance community competitiveness
- Focus on business retention and expansion
- Develop national-caliber business recruitment capabilities
- Cultivate small business, innovation and entrepreneurship
- Develop robust workforce solutions
- Tell the story of Louisiana's economic renaissance

With dedicated and knowledgeable professionals committed to Louisiana's economic future, LED strives to help businesses find the resources they need to make relocation and expansion a successful, profitable endeavor.

Louisiana Technology Council

The LTC is the premier advocate for the advancement of both existing and emerging technologies across all industry sectors in the State of Louisiana. The LTC provides value and support to its stakeholders by serving as the primary resource for the strategic direction of the State's technology agenda, including industry-university interactions, workforce development, educational programs, networking connections, and the global promotion of Louisiana's rich technological environment.

The Council includes corporate and university members.

Higher Education Institutions

Following are the institutions that participated actively in this study.

Delgado Community College is the largest higher education institution in Greater New Orleans and Louisiana's oldest and, by far, largest community college. Its 35 associate degree programs and 73 certificate, technical competency area and technical diploma programs and more than 100 non-credit courses serve the needs of its 20,500 students.

Dillard University is a fully accredited, historically black university with 1,250 students. In 2010, *US News and World Report* ranked Dillard among the nation's Top 10 Historically Black Colleges and Universities (HBCUs), based on its comprehensive undergraduate studies. Dillard offers 22 academic majors across seven departments and schools.

Louisiana State University Health Sciences Center New Orleans has teaching, research and health care functions state-wide through its six professional schools; 12 Centers of Excellence, and 100+ affiliated hospitals and other health science related institutions throughout the State.

Loyola University New Orleans, a Jesuit institution, is grounded in liberal arts, also offering opportunities for professional studies in undergraduate and graduate programs for its 5,000 students, via its Colleges of Business, Humanities/Natural Sciences, Music and Fine Arts, Social Sciences, and Law. Consistent with its Jesuit traditions, Loyola is characterized by its strong focus on community services and engagement.

Southeastern Louisiana University, located in Hammond, Louisiana, is the third largest public university in Louisiana, with 14,072 undergraduates and 1,342 graduate students. Southeastern consists of five colleges with 26 academic departments and programs, offering a total of 71 degree programs (4 associate degree programs, 48 baccalaureate degree programs, and 19 graduate degree programs).

Tulane University, a member of the prestigious Association of American Universities, has 8,271 undergraduates and more than 5,000 students in its graduate and professional schools, including liberal arts, science and engineering, architecture, business, law, social work, medicine, and public health and tropical medicine. With 4,400+ employees, it is the largest employer in New Orleans. Community involvement is now more important than ever as Tulane participates in the rebirth and rebuilding of New Orleans.

The **University of New Orleans**, a selective admissions public university of 8,263 undergraduates and 2,640 graduate students, is a comprehensive urban research institution committed to providing quality and affordable education to undergraduates and graduate students in the humanities, arts, sciences, engineering and professional programs. UNO serves the needs of the community through strong research that responds to the business community, as well as through academic and cultural activities and service learning experiences.

Xavier University of Louisiana, a private, coeducational, liberal arts college with the distinction of being the only historically black Roman Catholic institution of higher education, serves 3,300 students through its undergraduate and graduate programs. According to the US Department of Education, Xavier continues to rank first nationally in the number of African-American students earning undergraduate and graduate degrees in both the biological/life sciences and physical sciences. Its College of Pharmacy is among the top three producers of African American pharmacists in the Nation, and it ranks in the top 20 institutions for Pharmacy research funding from NIH.

Exhibit 4—Methodology for the Asset Inventory Database (AID)

Intended/Prospective Users

From initial discussions with the Working Group and RPC staff, the following potential users were identified as primary audiences for a new *Asset Inventory Database* (AID):

- Economic development organizations (on behalf of specific business prospects or members and in general marketing of Greater New Orleans)
- Companies (e.g., local companies looking for research or problem-solving partnerships; companies considering a move to Greater New Orleans)
- Industry site locators (on behalf of confidential clients)
- Venture capital investors (funds; corporate)
- University faculty, administrators, staff (to identify resources at nearby institutions)

Identification of, and consensus regarding, this group of users was an implicit yet critical feature of the methodology for design of the AID and decisions about future website capabilities. In addition to being guided by the *Target Industries*, the data collection process was carried out from the perspectives of these identified users, in order to establish the fundamental relevance of specific information and its anticipated uses. As the process moved forward, EKA team members asked this question: *"What would each of these users want to know about NOLA's academic institutions?"*

Data Collection

University members of the Working Group urged EKA to find a way to develop the AID without (yet another) query for information that they have provided to others in the past. With this guidance, EKA devised an approach for capturing already available information via websites of the participating institutions—and to use the AID as a device to collect in one place, sortable by industry and asset categories, information that could be accessed through the AID, via existing URLs. The university members of the Working Group then reviewed edited, and where necessary, supplemented the information thus compiled.

Benefits of Website-based Approach

Given the intent to avoid an additional data collection burden for the academic Working Group members and others at the institutions, the benefits of choosing to utilize the existing websites of the respective institutions as the main source of information with which to populate the AID cannot be over-emphasized.

Editorial Accuracy

Most significant of these benefits is that, in nearly all cases, the necessary content already is in place in the level of detail that the institution deems important and content already reflects the editorial viewpoint of the institution. The information is presumed to be factually correct. Thus, most fact-checking was eliminated. EKA was not required to create original text, which would have been time consuming to produce and, of necessity, subject to a lengthy review process.

Roadmap to Assets

Second, the websites of the individual academic institutions provide a ready-made roadmap to each university's unique organization structure, and to the topics and types of information *they* consider useful. Even though each of these websites was designed with certain audiences in mind, its organizing structure immediately points to categories of information that may be of interest to any audience, providing a check list for information that *could* be of value to the mostly external industry and EDO audiences intended as primary users of *the AID.* This helped speed the process of identifying relevant information for inclusion, and surfaced a wide variety of highly relevant content that might otherwise have been overlooked by a different technique—for example, a survey questionnaire.

Contact Information

Additionally, information obtained from the individual institution's website already incorporates some form of contact information—a key desired feature for the AID. The intent is that users seeking a particular asset may need additional information beyond that which the AID/website can be expected to convey. By identifying a contact person (the classic *Contact Us* page in many cases), there is a heightened utility of the information to the searching party, and the opportunity for follow-up with a specific person is thus facilitated.

Ability to Update

Above all, the burden of updating information lies principally with the originating academic institution. Keeping the AID updated is among its greatest challenges, and in this case, the updating process is undertaken by the academic organization in the course of its normal business. Particularly when there is merely a change of personnel (a constant process for any large organization), that updating done by a particular university is simply captured by the AID and is immediately available to the viewing public—simultaneously as it appears on the university's own website. To use a simplistic example: Nearly every institution has a Biology Department; Department Chairs rotate or new Chairs are recruited from outside. As "University A" changes its Biology Department Chair, its own website is updated internally. However its Home Page and URL are likely to remain the same, and would remain linked to the *Asset Inventory* database and website.

Limitations of Web-based Approach

This is not to say that reliance on data capture from the websites of individual institutions—through the mechanism of a live link—was without challenges. For purely technical reasons, a link from one website to another may be unintentionally broken, and require refreshing. Second, while some features of a university are likely to remain in place indefinitely—the example of a Biology Department used previously—many programs, initiatives, institutes and other features of the university asset landscape may change, in particular when new initiatives, programs etc. are begun, say, through a new hire or a new grant.

Likewise, organizational restructuring may lead to modifications of websites that would cause old links to disappear and new web pages to be established, whose new URLs need to be reintroduced to the AID as direct links. For these reasons, one of EKA's key recommendations addresses the need for an ongoing database/website maintenance capability by which to monitor and accommodate such changes on a regular basis.

Asset Categories

In addition to the capability of searching for assets by industry, it seemed important to identify information for inclusion in the AID by types or broad categories of assets. Accordingly, the consultant team organized seven *Asset Categories* as follows:

- **Organized Research Programs, Centers, and Institutes**

  Includes specifically organized **programs** of research and identifiable stand-alone facilities and research entities or organizations. Includes "Industry-University Alliances for/in Centers of Excellence."

- **Other Specialized Laboratories, Core Facilities, Instrumentation or Equipment**

  Includes other kinds of research assets, such as animal facilities, testing laboratories, special instrumentation, e.g., 3-D printing.

- **Industry-Specific Education**

  Includes only degree programs and certificate or training programs that are reasonably relevant to (or focused on) targeted industry sectors.

- **Business-Industry Partnerships**

  Includes special outreach, demonstration or externally-focused innovation programs or initiatives (i.e., not necessarily research). Also includes business/industry advisory councils.

- **Entrepreneurship Resources and Other General Business Services**

  Includes support services or other externally-focused professional or business services. Also includes entrepreneurship programs. Also may include business capital sources/resources and incentives, if any.

- **Internal Infrastructure to Support Research and Innovation**

  Includes research administration, technology transfer office, Institutional Review Board (IRB), and research and innovation policy framework. Also includes incubator facility or services or a research park.

- **General Information: Degrees, Faculty, Administration**

  Includes general information about the institution, e.g., lists of degree programs, academic units; faculty personnel; and administrative units

The definitions of these *Asset Categories* were, on the one hand, intuitively obvious and, on the other hand, were continuously evaluated throughout the data collection process to ensure that categories for classifying information would remain logical, internally consistent, and relevant to likely user groups. As such, they became the key building blocks of the database architecture, under which individual, specific assets were identified.

Populating the AID and Review and Validation Process

With AID architecture thus defined, the search for relevant information in the university websites was driven by considerations of: a), Target Industry Type; b) User intent or characteristics ("what are they looking for"); and c) a fit under one or more Asset Category groupings.

Data Fields and Searchability

To make the AID more robust and useful as a tool with searchable capabilities, additional fields were added that would either facilitate the query process, or that would provide key information needed for a user to make informed use of the particular asset.

These included an academic or business unit to which the asset was attached, e.g., a School of XYZ, a Department of X, or an ABC Institute. In many cases, the School, Department, Center, or Institute was itself the asset. In other cases, the asset comprised specific elements within the School, Department or Institute, for example, specialized equipment, lists of faculty research interests or recent grants, industry partnership programs, or a particular building or facility.

Additionally, beyond tying the asset to an academic business unit where it is located, a field containing a short description of the asset was established. These varied from a single sentence to a brief paragraph and were, in most cases, drawn directly from the host web page. This allows the user to obtain at-a-glance basic information to confirm that the asset is indeed of interest and worth pursuing via the link to that asset's own university-based website page.

Other fields were established for the asset's full URL; and if the asset had a page containing specific contact information, a field for that also was included. Finally, for each asset, EKA created fields designating the target industry (or multiple industries) for which it was relevant.

Working Group Review of Database Beta Version

Once a complete scan of the university websites was completed, the relevant assets identified, and a beta version of the AID assembled, meetings were held with the university Working Group members. Each university was provided the opportunity to review, edit, and, where necessary, supplement its compiled information. An online meeting of the Working Group also was conducted, to demonstrate the general characteristics of the AID as a whole, including a test of its preliminary search capabilities based on illustrative user queries. Feedback from the Working Group helped identify additional refinements needed to these capabilities and issues to be addressed in future website development and implementation.

Exhibit 5—Tulane Riverfront Campus: A University-Industry Dialogue about Expanding R&D and Business Partnerships for Coastal Restoration and Water Management

Date/Location

January 23, 2013, GNO, Inc.

Agenda

8:30 – 9:00am	Early Arrivals / Coffee / Networking
9:00 – 9:10am	Welcome and Introductions Kara Renne, Regional Planning Commission and Robin Barnes, GNO, Inc.
9:10 – 9:30am	*The University Perspective:* *Riverfront Campus for Applied Coastal Sciences & Engineering: Programs, Plans, and Ideas* Michael Blum, Tulane University
9:30 – 9:50am	*The Industry Perspective:* *Coast Builders Coalition: Local Industry/Companies Overview and Overview of R&D Interests/Needs* Scott Kirkpatrick, President, Coast Builders Coalition
9:50 – 11:00am	Dialogue about *Best Paths Forward for Building R&D / Business Partnerships* Moderators: Eva Klein and W. Mark Crowell

Speakers

Dr. Michael Blum, Associate Professor, PI; Eugenie Schwartz Professor of River and Coastal Studies; and Interim Director, Center for Bioenvironmental Research, Department of Ecology & Evolutionary Biology, Tulane University

Scott Kirkpatrick is the President of the Coast Builders Coalition and Partner at Roedel Parsons law firm where he represents a variety of clients on government relations matters.

Workshop Facilitators

Eva Klein, President, Eva Klein & Associates

W. Mark Crowell, Consulting Associate, Eva Klein & Associates, and Executive Director, UVA Innovation, University of Virginia

Invited Participants

Universities with R&D in coastal stabilization and water management, and other water related areas, e.g.:

Research and technology transfer administrators
Academic administrators, e.g. deans

Members of Coast Builders Coalition

Participants

Company	First Name	Last Name	Title
Arcadis	Joe	Sensebe	
Bean	James	Bean	
Bean	Ancil	Taylor	
Bertucci Construction	Tony	Zelenka	
Chevron	Felicia	Frederick	
Chevron	Brent	Wood	
Coast Builders Coalition	Lindsey	Golden	
Coast Builders Coalition	Scott	Kirkpatrick	
Coastal Environments Inc	Bill	Kappel	
Environmental Defense	Jackie	Roberts	
GNO Inc	Robin	Barnes	Executive VP & COO
GNO Inc	Vera	Lester	
GNO Inc	James	Moffett	
Horizon Inc.	Billy	Marchal	Horizon Initiative
IMTT	Ridgely	Myers	
Kramer Amado	Thomas	Stuart	Technical Specialist
Loyola University	Robert	Thomas	
MWH Americas	Anthony	Risko	
MWH Global	Jon	Risinger	
NOLABA	Melissa	Ehlinger	Director, Strategy & Policy
NWF	Maura	Wood	
Odebrecht	David	Peebles	
Odebrecht	Gustavo	Silveira	
Royal Engineering	Randy	Smith	
Southeastern Louisiana Univ.	Dan	McCarthy	Dean, College of Science & Technology
Tulane	Michael	Blum	Riverfront Campus
Tulane University	John	Christie	Executive Director, Tech Transfer
Tulane University	Melissa	Erekson	Director, CFR
Tulane University	Christine	Hoffman	Executive Director, CFR
UNO	Steve	Johnson	Interim VP, Research
W&B Architects	Maria	Papacharalambous	
Weeks Marine	Chuck	Broussard	
Weeks Marine	Thomas	Simnick	

Exhibit 6—NCAM: Organizing for the Next Generation of Accomplishments in STEM^2 Education

Date/Location

January 23, 2013, Regional Planning Commission

Agenda

1:00 – 1:10pm	Welcome & Introductions
	Kara Renne, Regional Planning Commission
	Informational Presentations (Titles Approximate)
1:10 – 1:30pm	NCAM 2.0 & National Network of Manufacturing Innovation (NNMI) Overview
	Rick Koubek, Interim Director, NCAM and Dean of Engineering, LSU-Baton Rouge
1:30 – 1:50pm	An Overview of Delgado Advanced Manufacturing Center of Excellence
	Deborah Lea, Vice Chancellor for Academic Affairs, Delgado Community College
1:50 – 2:00pm	Employer Survey of Gaps in Advanced Manufacturing Workforce (Early Findings)
	Jana Sikdar, Educational Liaison, GNO, Inc.
2:00 – 2:20pm	STEM^2 Education for Advanced Manufacturing: Current Programs and Expanding Into New Areas
	Norm Whitley, Dean, Engineering, University of New Orleans
2:20 – 2:30pm	Break
2:30-4:00pm	**Facilitated Discussion on the Development of Strategies for Meeting Education/Skills/ Workforce Needs of Advanced Manufacturers:**
	What are our current workforce gaps and our strategies for meeting those gaps?
	How should we get started to organize regionally re: STEM^2, and for an NNMI proposal?

Workshop Facilitators

Eva Klein, President, Eva Klein & Associates

W. Mark Crowell, Executive Director, UVA Innovation, University of Virginia and Consulting Associate, Eva Klein & Associates

Invited Participants

NASA and University Participants in NCAM

Representatives of higher education institutions with STEM^2 programming, including University Academic Administrators (e.g., Deans in Science, Engineering & Business)

EDOs involved with workforce planning.

Participants

Company	First Name	Last Name	Title
Delgado Community College	Debbie	Lea	VCAA
GNO Inc	Jana	Sikdar	Educational Liaison
Horizon Inc.	Billy	Marchal	Horizon Initiative
LED	Susie	Schowen	Workforce Initiatives Mgr.
Loyola University	Heidi	Davis	Dir. Spon Programs
LSU	Ryan	Cooney	Dr. Corp. Relations & Econ Dev
LSU	Craig	Harvey	MIE faculty
LSU	Rick	Koubek	Dean of Engineering
NOLABA	Tre	Rials	Sr. Policy Analyst
Southeastern Louisiana University	Dan	McCarthy	Dean College of Science & Tech
Tulane	Nick	Altiero	Dean, Science/Engineering
UNO	Steve	Johnson	Int. VP Research
UNO	Tumulish	Solansky	Chair, Math Dept.
UNO	Norm	Whitley	Interim Dean

Dr. Sanjeev Munshi
Merck

Dr. Robert Zivin
University of Miami

Marcia Mellitz
BioSTL

Exhibit 7—Enhancing Life Sciences Collaborations: What Does Industry Need from Universities?

Date/Location

January 29, 2013, New Orleans BioInnovation Center

Agenda

8:00 – 8:25am	Arrivals / Coffee Greetings / Networking
8:25 – 8:35am	Welcome and Introductions Aaron Miscenich and Jim McNamara
8:35 – 8:45am	*Setting the Stage for the Panel Presentations* (Mark Crowell, Workshop/Panel Moderator)
8:45 – 9:05am	*Presentation on Industry Perspectives* Robert Zivin, PhD, University of Miami
9:05 – 9:25am	*Presentation on Industry Perspectives* Sanjeev Munshi, PhD, Merck Research Laboratories
9:25 – 9:45am	*Presentation: The Balsa Group (St. Louis)* and *Response to Industry Comments* Marcia Mellitz, BioSTL, St. Louis, MO
9:45 – 10:00am	Break
10:00 – 11:30am	*Dialogue/Discussion: Implications and Ideas for New Orleans* Mark Crowell, Moderator; Dr. Zivin, Dr. Munshi, Ms. Mellitz, Responders
11:30 – 11:40am	Wrap-Up Comments and Adjournment Kara Renne

Speakers and Facilitators

Robert Zivin, PhD, Research Associate Professor and Senior Fellow, Wallace H. Coulter Center at the University of Maim Miller School of Medicine and formerly Senior Director Corporate Office of Science & Technology, Johnson and Johnson

Sanjeev Munshi, PhD, Director in External Research and Licensing, Merck Research Laboratories

Marcia Mellitz, Vice President, BioSTL and Consulting Associate, Eva Klein & Associates

Facilitators

Eva Klein, Eva Klein & Associates

W. Mark Crowell, Executive Director, UVA Innovation, University of Virginia, and Consulting Associate, Eva Klein & Associates

Invited Participants

Universities performing Life Sciences research

EDOs: GNO, Inc. New Orleans Business Alliance, Louisiana Economic Development

Representatives of seed/venture funds

Participants

Company	First Name	Last Name	Title
BioDistrict	James	McNamara	Pres & CEO
GNO Inc	Jana	Sikdar	Educational Liaison
Loyola University	Renny	Simno	Development Officer
LSUHSC-NO	Patrick	Reed	Director, Tech Transfer
NOBIC	Jason	Doherty	Dir., Commercialization
NOLABA	Melissa	Ehlinger	Dir. Strategy & Policy
Tulane	Verna	Lee	Asst. Director
Tulane	Ryan	Meck	Corporate & Foundation Relations
Tulane	Monique	Rhodes	Grants & Contracts Industry Sponsored Projects
Tulane	Chad	Roy	Faculty
Tulane University	Melissa	Erekson	Director, CFR
Tulane University	Christine	Hoffman	Exec. Dir. CFR
UNO	Steve	Johnson	Interim VP Research
UNO	Wendy	Schluchter	Dean College of Science
Xavier University	Rachel	Cruthirds	Asst. VP Resource Development

EVA KLEIN & ASSOCIATES

Exhibit 8—Innovation U: Enhancing the University's Role in Innovation-Based Economic Development

W. Mark Crowell
University of Virginia
Eva Klein & Associates

Date/Location

January 24, 2013, Regional Planning Commission

Agenda

8:30 – 9:00am	Early Arrivals / Coffee / Networking
9:00 – 9:10am	Welcome and Introductions Kara Renne, Regional Planning Commission
9:10 – 9:40am	"*Innovation U: Enhancing the University's Role in Innovation-Based Economic Development*" A Presentation by W. Mark Crowell University of Virginia and Eva Klein & Associates
9:40 – 10:50am	Facilitated Dialogue: *"Ideas and Implications for New Orleans' Institutions"* Specific Ideas for Recommendations and Future Consideration/Implementation Facilitators: Mark Crowell and Eva Klein
10:50 – 11:00am	Wrap-Up, Next Steps, and Adjournment

Workshop Facilitators

W. Mark Crowell, Presenter/Facilitator, Executive Director, UVA Innovation, University of Virginia and Consulting Associate, Eva Klein & Associates

Eva Klein, President, Eva Klein & Associates

Invited Participants

Universities:

University members of the Working Group

Academic Leaders/Administrators, e.g. Deans, VPs, AVPs

Directors or Managers of any Programs that do or should involve industry partners

Participants

Company	First Name	Last Name	Title
Kramer Amado	Thomas	Stuart	Tech. Spec.
LED	Susie	Schowen	Workforce Initiatives Mgr.
LSUHSC-NO	Patrick	Reed	Director, Tech Transfer
SBA Advocacy	Caitlin	Cain	Region VI Advocate
Tulane University	John	Christie	Exec. Dir. Tech Transfer
Tulane University	Christine	Hoffman	Exec. Dir. CFR
UNO	Jim	Amdal	Transportation Institute Sr. Research Associate
UNO	Monica	Farris	Director, CHART
UNO	Kevin	Graves	Assoc. Dean Liberal Arts
UNO	Steve	Johnson	Int. VP Research
UNO	Susan	Krantz	Dean, Liberal Arts
UNO	Michael	Mizell-Nelson	Assoc. Prof. History
UNO	John	Renne	Dir. Transportation Institute and Assoc. Prof.
UNO	Wendy	Schluchter	Dean College of Science
Xavier University	Rachel	Cruthirds	Asst. VP Resource Development
Xavier University	Gene	D'Amour	Sr. VP Resource Development

Exhibit 9—Student Experiential Education Programs—Another Pathway for University-Industry Collaborations

Date/Location

January 24, 2013, Regional Planning Commission

Preliminary Agenda

1:00 – 1:10pm	Welcome & Introductions
	Kara Renne, Regional Planning Commission
1:10 – 1:25pm	*Collaborations for Learning and Recruitment: A Brief Overview of Experiential Education Programs*
	(Cooperative Education, Work-Study, Internships, Service Learning, Undergraduate Research, etc.)
	Eva Klein, Eva Klein & Associates
1:25 – 1:40pm	*What Our Universities Do Currently* (mini-presentations by university participants)
1:40 – 2:50pm	*Discussion: Ideas for Recommendations and Future Consideration / Implementation*
	e.g., Why and How Should Institutions Consider Expanding Experiential Education Programs?
	How Can Institutions Leverage Between These Programs and Other Industry Collaborations?
	Moderator: Eva Klein
2:50 – 3:00pm	Wrap-Up, Next Steps, and Adjournment

Workshop Facilitator

Eva Klein, President, Eva Klein & Associates

Invited Participants

University Participants:

- Directors of Existing Experiential Learning Programs
- Career/Placement Directors
- Financial Aid Directors
- Interested Deans and Other Academic Affairs Leadership

Eva Klein
Eva Klein & Associates

EVA KLEIN & ASSOCIATES

Participants

Company	First Name	Last Name	Title
Dillard	Ruby	Broadway	Dept. of Biology
Dillard	Karen	Coleman	Sponsored Research Assoc.
GNO Inc	Jana	Sikdar	Educational Liaison
LED	Susie	Schowen	Workforce Initiatives Mgr.
Loyola University	Kathy	Barnett	Asst. Prof. College of Business, Dir., Career Devpt
Loyola University	Heidi	Davis	Dir. Sponsored Programs
Southeastern Louisiana University	Dan	McCarthy	Dean, College of Science & Tech
Tulane	Katie	Houck	Asst. Director/CPS
Tulane	Allen	Thomas	Asst. Dir., Experiential Engagement - Center for Engaged Learning & Teaching
Tulane University	John	Christie	Exec. Dir. Tech Transfer
UNO	Anthony	Cipolone	Asst. Dean, College of Liberal Arts
UNO	Sean	Hickey	UG Coord/Chem
UNO	Susan	Krantz	Dean, College of Liberal Arts
UNO	Beth	LeBlanc	Asst Dean, College of Liberal Arts
UNO	Michael	Mizell-Nelson	Assoc. Prof., History
UNO	John	Renne	Dir. Transportation Institute and Assoc. Professor
UNO	Wendy	Schluchter	Dean, College of Science
UNO	Carol	Short	Transportation Institute Assoc. Dir.
Xavier University	Rachel	Cruthirds	Asst VP Resource Development

Exhibit 10—Scale of Higher Education in Greater New Orleans—Selected Statistics

Following are tables of statistics for the region's private institutions, public (senior) institutions, and community/technical colleges. The Summary table is provided above in Section 3.

Greater New Orleans Colleges and Universities—Metrics of Combined Scale: 2011*

PRIVATE INSTITUTIONS	Dillard University	Our Lady of Holy Cross College	Loyola University-New Orleans	Tulane University	Xavier University-Louisiana	Subtotals—Private Institutions
Undergraduate Students	1,249	980	3,165	8,271	2,593	16,258
Graduate & Professional Students	0	245	1,843	4,574	806	7,468
Total Number of Students	1,249	1,225	5,008	12,845	3,399	23,726
# Associate Degrees Awarded	N/A	5	N/A	40	N/A	45
# Certificates Awarded	N/A	N/A	N/A	N/A	N/A	N/A
# UG (Bacc.) Degrees Granted	304	142	448	1,296	301	2,491
# Graduate & Professional Degrees Granted	N/A	62	593	1,763	180	2,598
Total Degrees and Certificates	304	209	1,041	3,099	481	5,134
Faculty Full Time	80	46	325	1,136	240	1,827
Faculty Part Time	51	72	133	553	27	836
Total Faculty	131	118	458	1,689	267	2,663
Staff Full Time	237	42	544	3,009	481	4,313
Staff Part Time	11	14	99	640	39	803
Total Staff	248	56	643	3,649	520	5,116
Full Time Equivalent (FTE) All Employees	337	115	946	4,542	743	6,683
$ Core Revenue All Sources 2011 (in $000s)	$34,631	$15,982	$130,884	$707,636	$121,409	$1,010,542
$ Endowment (inc.Quasi-Endowment) (in $000s)	$54,784	$26,229	$267,346	$1,004,738	$139,971	$1,493,068
Research Expenditures 2010 (in $000s) **	$8,425	N/A	$595	$165,513	$8,029	$182,562

Notes:
* All data, unless otherwise noted, are from IPEDS, US Department of Education, Fall 2011.
**Research expenditures data are from Higher Education Research and Development (HERD) Survey, National Science Foundation, 2010.
N/A = Not Applicable or Not Available in either the IPEDS or HERD databases.

EVA KLEIN & ASSOCIATES

Exhibit 10—Scale of Higher Education in Greater New Orleans—Selected Statistics (continued)

Greater New Orleans Colleges and Universities—Metrics of Combined Scale: 2011*					
PUBLIC (SENIOR) INSTITUTIONS	University of New Orleans	Southeast Louisiana University	LSU Health Sciences Center-New Orleans	Southern University-New Orleans	Subtotals-Public Senior Institutions
Undergraduate Students	8,263	14,061	882	2,805	26,011
Graduate & Professional Students	2,640	1,342	1,895	440	6,317
Total Number of Students	10,903	15,403	2,777	3,245	32,328
# Associate Degrees Awarded	N/A	173	11	24	208
# Certificates Awarded	N/A	N/A	N/A	N/A	N/A
# UG (Bacc.) Degrees Granted	1,435	1,932	277	274	3,918
# Graduate & Professional Degrees Granted	747	444	468	157	1,816
Total Degrees and Certificates	2,182	2,549	756	455	5,942
Faculty Full Time	377	509	701	113	1,700
Faculty Part Time	129	105	134	34	402
Total Faculty	506	614	835	147	2,102
Staff Full Time	715	762	2,158	210	3,845
Staff Part Time	462	366	275	20	1,123
Total Staff	1,177	1,128	2,433	230	4,968
Full Time Equivalent (FTE) All Employees	1,141	1,347	2,955	341	5,784
$ Core Revenue All Sources 2011 (in $000s)	$203,466	$175,712	$456,859	$42,581	$878,618
$ Endowment (inc.Quasi-Endowment) (in $000s)	$19,766	$11,094	$74,262	$4,311	$109,433
Research Expenditures 2010 (in $000s) **	$35,021	$2,561	$59,776	$402	$97,760

Notes:

* All data, unless otherwise noted, are from IPEDS, US Department of Education, Fall 2011.

**Research expenditures data are from Higher Education Research and Development (HERD) Survey, National Science Foundation, 2010

N/A = Not Applicable or Not Available in either the IPEDS or HERD databases.

Exhibit 10—Scale of Higher Education in Greater New Orleans—Selected Statistics (continued)

Greater New Orleans Colleges and Universities—Metrics of Combined Scale: 2011*

COMMUNITY AND TECHNICAL COLLEGES	Delgado Community College	Nunez Community College	River Parishes Community College	North Shore Technical Community College	South Central LA Technical College-Reserve	Subtotals—Community & Technical Colleges
Undergraduate Students	20,436	2,443	2,673	3,349	3,491	32,392
Graduate & Professional Students	N/A	N/A	N/A	N/A	N/A	N/A
Total Number of Students	20,436	2,443	2,673	3,349	3,491	32,392
# Associate Degrees Granted	1,362	120	108	15	121	1,726
# Certificates Awarded	1,116	140	357	1,601	3,665	6,879
# UG (Bacc.) Degrees Granted	N/A	N/A	N/A	N/A	N/A	N/A
# Graduate & Professional Degrees Granted	N/A	N/A	N/A	N/A	N/A	N/A
Total Degrees and Certificates	2,478	260	465	1,616	3,786	8,605
Faculty Full Time	519	38	48	66	56	727
Faculty Part Time	438	42	51	0	22	553
Total Faculty	957	80	99	66	78	1,280
Staff Full Time	451	63	49	58	50	671
Staff Part Time	112	10	6	4	1	133
Total Staff	563	73	55	62	51	804
Full Time Equivalent (FTE) All Employees	1,154	118	116	126	113	1,627
$ Core Revenue All Sources 2011 (in $000s)	$144,594	$14,108	$11,130	N/A	N/A	$169,832
$ Endowment (inc.Quasi-Endowment) (in $000s)	$2,125	$1,194	$486	N/A	N/A	$3,805
Research Expenditures 2010 (in $000s) **	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

* All data, unless otherwise noted, are from IPEDS, US Department of Education, Fall 2011.

**Research expenditures data are from Higher Education Research and Development (HERD) Survey, National Science Foundation, 2010.

N/A = Not Applicable or Not Available in either the IPEDS or HERD databases.

EVA KLEIN & ASSOCIATES

Exhibit 11—LSU A&M College—R&D Expenditures (as One Benchmark)

Greater New Orleans Universities Are in Good Company		
NSF Rank	Institution	$000s
71	Indiana University-Purdue University-Indianapolis	$296,194
72	University of Tennessee-Knoxville	$291,787
73	Louisiana State University and A&M College	$289,872
74	University of Miami	$280,671
	New Orleans Universities—Hypothetically Combined	$280,322
75	University of Virginia	$276,308
76	University of Kansas	$267,961
77	Rockefeller University	$265,750
	Average for the Above Group including Combined New Orleans	$281,108

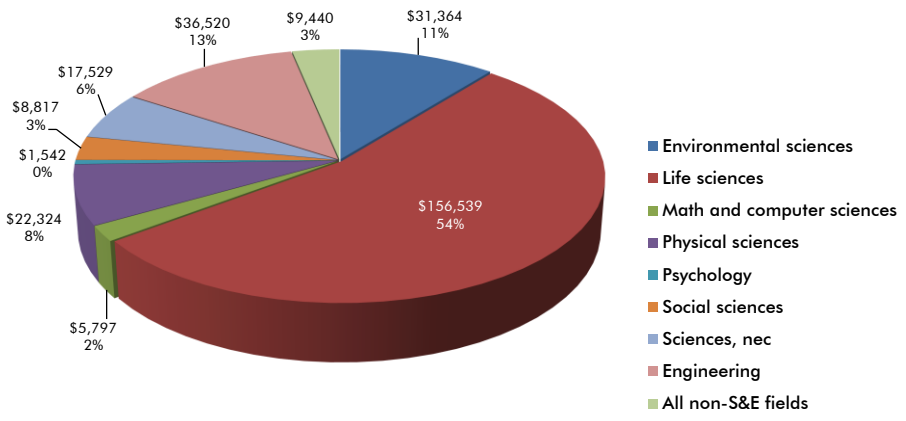
Source: HERD Survey, National Science Foundation, 2010

Note: NSF changed its methodology for reporting systems vs. individual campuses for the FY2010 HERD Survey. It is likely that the LSU Baton Rouge figure includes Agriculture, Pennington Research Center, and other units, in addition to A&M College.

Using FY2010 National Science Foundation (NSF) data, to illustrate the collective scale of research in the New Orleans region, when the research expenditures of the New Orleans institutions are aggregated, the total is in the range of $280MM. Chapter 3 contains the list (also shown here) of other institutions for which research expenditures are in the same range as the total for the New Orleans region.

The R&D expenditures for LSU provide an interesting comparative data point or benchmark. Following is a pie chart that shows the distribution of LSU's $290 MM in research expenditures by field and another pie chart that shows the distribution, within Life Sciences, among the four sub-fields of Life Sciences. These are provided as background information only—as a benchmark of "scale" for the New Orleans collective research enterprise. Baton Rouge and New Orleans (collectively) are of roughly equivalent scale—as centers of university research performance.

LSU Baton Rouge: R&D Expenditures FY2010, by Field (in $000s)



Note: The term "not elsewhere classified" (n.e.c.) is used for multidisciplinary projects within a broad field and for single discipline projects for which a separate field has not been assigned.

http://www.nsf.gov/statistics/nsf02321/secta.htm

LSU Baton Rouge: R&D Expenditures, FY2010, Distribution of Life Sciences by Sub-Field (in $000s)

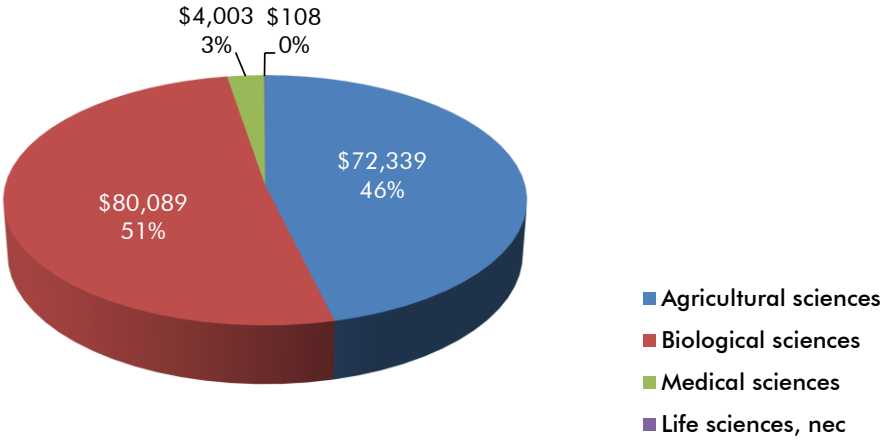


Exhibit 12—Examples of University Consortia

Consortium for Education, Research, and Technology of North Louisiana

http://www.certla.org/

Formed in 1996, initially based on a *Memorandum of Understanding*, CERT is incorporated as a non-profit organization to expand business activity across North Louisiana through the resources of the 11 member institutions. CERT members include two historically black universities, technical and community colleges, state and private colleges and universities, and liberal arts, comprehensive, medical, and research institutions.

CERT's mission is to match Louisiana's higher education resources with the economic and workforce development needs of citizens and businesses in the 22-parish region of North Louisiana.

CERT strives to create a highly-skilled workforce and to foster economic development by partnering industry, education, and government. CERT serves as the intermediary—the convener and facilitator—that links North Louisiana's institutions (from the State's post-secondary systems) with industry.

CERT was created as a result of a recommendation of Eva Klein & Associates for the Biomedical Research Foundation of NW Louisiana in 1996—in connection with creation of a Regional Biosciences Strategy and InterTech Science Park. Supported by the Foundation, Eva Klein personally staffed monthly meetings of the CERT chancellors/presidents for the first two years of CERT's existence, until resources were found to hire an Executive Director.

University Circle, Inc. (Cleveland)

http://www.universitycircle.org/

UCI is a development, service, and advocacy organization whose origins date to the 1890s, accommodating the growth of what was then Western Reserve University and Case Institute of Technology. Reorganized in 1970 with an updated mission, its members today also include the Cleveland Museum of Art, the Cleveland Clinic, the Cleveland Museum of Natural History, the Cleveland Botanical Garden and other institutions. It is responsible for the growth of University Circle as a premier urban district and world-class center of innovation in health care, education, and arts & culture. It accomplishes this by:

- Developing modern urban living, distinctive hotels, and nationally known restaurants
- Reviving Cleveland's historic Main Street and connecting it to its historic neighborhoods
- Creating a seamless neighborhood of active and inviting places and spaces for people of all ages to enjoy
- Connecting our local business community to our world-class institutions
- Celebrating our four-season city with the region's largest, free seasonal cultural events
- Keeping the neighborhood clean, safe, and attractive for more than 3 million people who visit, learn, work, and live here each year

University City Science Center (Philadelphia)

http://www.sciencecenter.org/

Founded in 1963, the Science Center began as a collaboration among several Philadelphia areas academic institutions, seeking to share research and academic resources. Structured as an independent nonprofit 501(c)(3) organization, the Science Center organization has grown to include 31 colleges, universities, hospitals and research institutions shareholders throughout Pennsylvania, New Jersey, and Delaware. Its mission today is to support technology commercialization and technology-based economic development on its campus and in the Greater Philadelphia region. It also has developed the oldest and largest urban research park in the United States.

Life Sciences South Florida

http://lifesciencessf.org/

LSSF is a relatively new and, as of now, unincorporated consortium of 16 educational, economic development, and research institutions in South Florida: Florida International University, Florida Atlantic University, Florida Gulf Coast University, Nova Southeastern University, University of Miami, Miami-Dade College, Broward College, Palm Beach State College, Indian River State College, the Beacon Council, the Business Development Board of Palm Beach County, Greater Fort Lauderdale Alliance, Florida Atlantic Research Park, University of Miami Life Sciences and Technology Park, Max Planck Florida Institute, and Scripps Florida. A *Memorandum of Understanding* provides the basis for its ongoing collaboration and initiatives.

The mission of LSSF is to spawn and stimulate economic growth in South Florida by linking the elements of the innovation ecosystem: research, entrepreneurship, venture capital, and life sciences companies, with a goal toward increasing research density and accelerating research commercialization. Additionally, the life sciences and biotechnology workforce required to support economic innovation will be strengthened by enhancing K-20 STEM education and talent development in the region.

Georgia Innovation Crescent

http://www.georgiainnovationcrescent.com/

The Innovation Crescent is both a geographic area and a coalition of more than a dozen counties and life science and economic development entities, all dedicated to supporting Georgia's life science growth. Its mission is twofold:

- Accelerate the growth of the Innovation Crescent through focused education and economic development activities
- Support the development of life science companies, organizations and institutions located in the Innovation Crescent

The region's counties collaborate on specific workforce development initiatives that support development of its life science industry cluster.

Some 23 institutions of higher education, community colleges and technical schools are located within the Crescent geography, including research-intensive universities such as University of Georgia, Emory University and Georgia Institute of Technology. Additionally it includes government entities and nonprofits such as the Centers for Disease Control, Arthritis Foundation, USDA and the American Cancer Society; and a wide range of life science companies.

Capital Region Career Consortium

http://www.crcareerconsortium.org/

This is an example of a consortium focused on a specific set of higher education functions. The Capital Region Career Consortium consists of 17 academic institutions in the Albany, NY/ Hudson Valley region. Its members discuss best practices, host networking events, and collaborate on programs. Within the CRCC, several subcommittees exist with the goal of working efficiently to improve communication with employers/ organizations, including website, toolkit, promotion/collaboration, and a centralized job portal. Employers seeking to post a job or internship opportunity to the institutions that are part of the consortium may do so through the portal.

Other Higher Education Consortia

In addition to examples like those above which had specific initial programmatic foci for economic development, industry-focused innovation, urban redevelopment, or career services, there is a long and quite robust history of *general-purpose university consortia* in metro areas or regions. Many of these go back to the 1960s or even earlier. Usually these regional higher education consortia were created for multiple purposes among which: to share resources (e.g. library holdings); to permit/facilitate cross-registration of students; to undertake specific initiatives in research or service; to operate highly specialized, expensive facilities (e.g. an observatory or supercomputer); and to generally market the metro area or region's higher education resources.

Just a few examples of the many university consortia across the US are:

Kentuckiana Metroversity
http://metroversity.org/

Claremont University Consortium
http://www.cuc.claremont.edu/

Great Lakes Colleges Association
http://glca.org/

Consortium of Universities of the Washington Metropolitan Area
http://www.consortium.org/consortium/index.cfm

Five College Consortium (western Massachusetts)
https://www.fivecolleges.edu/

Exhibit 13—Examples of Federal Grant Opportunities

More and more, federal agencies are issuing solicitations for larger grants that require multi-disciplinary, multi-institutional collaboration. Further, they are seeking university-industry-community organization partnerships in the execution plan. NIH is issuing an increasing number of grant solicitations as "translational" research projects or centers. Other agencies, led by US EDA, are targeting Regional Innovation Clusters (RICs) and entrepreneur development. Budget constraints likely will determine if and how many such grants will be offered in the very near future. Examples of past grants include:

- EDA i6 and other RIC grants
- DOE energy clusters, such as the greater Philadelphia area
- National Heart, Lung & Blood Institute designated translational research centers

On the other hand, the President has proposed new initiatives that, in some measure, will require Congressional appropriation, so it is not certain if and when such grants will be available. These include:

- The Human Brain project
- Designated regional manufacturing centers

That said, there are currently significant grant opportunities, among which are:

Department of Energy

ARPA-E grants for high-potential energy technology projects across 14 distinct program areas.

Department of Labor

DOL has been awarding multi-million dollar grants to community colleges to train and retrain workers for the new industries and in entrepreneurship.

National Science Foundation

1. NSF *Partnerships for Innovation* grants to universities, $600,000 over 2 or 3 years.
2. NSF just announced a major expansion of its *Innovation Corps* program, to teach NSF-funded university researchers how to build profitable startups around their technologies. In its initial stages, the *I-Corps* program has been funding prototype versions of the *"Lean Launchpad"* course originally developed at Stanford. Now the program is spreading to nine more universities, which have been singled out for three-year grants totaling $11.2MM.

Department of Commerce—Manufacturing Centers

The Department of Commerce is seeking to strengthen manufacturing supply chains through its Manufacturing Extension Partnership (MEP) program. The President is proposing a $25 million increase to launch Manufacturing Technology Acceleration Centers (MTACs), industry-specific centers that can serve as a coordination point within key supply chains. The Administration plans to pilot two new centers in 2013 using existing resources.

National Network Manufacturing Initiatives (NNMI)

The President is proposing a one-time, $1 billion investment to launch a network of 15 manufacturing innovation institutes across the country. Leveraging the strengths of a particular region, each institute will bring together companies, universities and community colleges, and government to co-invest in the development of world-leading manufacturing technologies. Three new institutes will be launched this year as a co-investment between Federal agencies, led by the Departments of Defense and Energy, and the private sector, with an initial focus on manufacturing technologies that also address critical national security and energy needs.

National Institutes of Health

1. The NIH Centers for Accelerated Innovations (NCAI) will develop Centers that (1) solicit and select promising emerging technologies, such as therapeutics (e.g., drugs, biologics), preventatives, diagnostics, devices, tools, etc. and (2) facilitate their translation to commercialized products that improve patient care and enhance health. The NCAI will nurture the development of high priority early-stage technologies within the NHLBI's mission in a manner consistent with business case development and regulatory requirements by providing (1) funding for product definition studies (e.g. feasibility studies, prototype development, or proof-of-concept studies), (2) unified and coordinated access to expertise in areas required for early technology development, including scientific, regulatory, reimbursement, business, legal, and project management, and (3) training and hands-on experience in entrepreneurism. Establishing public-private partnerships and providing non-federal funds will be critical for success.
2. Examples of other major NIH grants:
   - → Biomedical Information Science and Technology Initiative (BISTI)
   - → NIH Blueprint for Neuroscience Research
   - → Research Supplements to Promote Diversity in Health-Related Research
   - → Genome-Wide Association Studies
   - → Collaborative Human Tissue Network (CHTN)—NCI
   - → Specialized Cooperative Centers in Reproduction and Infertility Research—NICHD
   - → NINDS Institutional Center Core Grants to Support Neuroscience Research
   - → Feasibility Studies to Build Collaborative Partnerships in Cancer Research—NCI
   - → Centers of Excellence for Translational Research (CETR)—NIAID
   - → Creating Virtual Consortium for Translational/Trans-disciplinary Environmental Research (ViCTER)—NIEHS
   - → Academic-Industrial Partnerships for Translation of in vivo Imaging Systems for Cancer Investigations—NCI
3. Project and center grants for large, multi-project efforts that generally include a diverse array of research activities
   - → Research Program Project Grant—support for integrated, multi-project research involving a number of independent investigators
   - → Exploratory Grants—planning activities for large, multi-project grants
   - → Center Core Grants—for shared resources and facilities for a number of investigators from different disciplines or from the same discipline who focus on common research
   - → Specialized Center—the spectrum of activities which comprise a multidisciplinary attack on a specific disease entity or biomedical problem area.

Exhibit 14—Experiential Education Resource Information

International Association for Research on Service-Learning and Community Engagement

http://www.researchslce.org/

National Society for Experiential Education

http://www.nsee.org/

Cooperative Education and Internship Association

http://www.ceiainc.org/home.asp

World Association of Cooperative Education

http://www.waceinc.org/

International Association for Experiential Education

http://www.icel.org.uk/

National Association of Colleges and Employers

http://www.naceweb.org/home.aspx

Association for Experiential Education

http://www.aee.org/

Council for Adult and Experiential Learning

http://www.cael.org/home

Corporation for National and Community Service

http://www.nationalservice.gov/

National Service Learning Clearinghouse

http://www.servicelearning.org/

503 Seneca Road Great Falls, Virginia 22066 USA
PH: 703.406.6100 F: 703.406.6101
evakleinassociates.com evaklein@evakleinassociates.com

EVA KLEIN & ASSOCIATES LLC
Strategies for the Global Knowledge Economy