USF SYSTEM

RESEARCH STRATEGIC PLANNING

FINAL RECOMMENDATIONS

Focus on issues where society urgently needs innovation and change

Work across disciplines

Break down academic silos

Prepared by the USF System Research Strategic Planning Committee
Co-Chairs: Sudeep Sarkar, USF Research & Innovation; Ed Funai, USF Health
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1. Introduction

This report is the result of a charge from USF System President Judy Genshaft and the USF System Senior Vice President for Research, Innovation & Economic Development to develop an aspirational vision for research and innovation across the USF System that is aligned with the overall USF System vision, and accompanied by well-defined areas of distinction with:

- Strong potential for a rapid increase in external funding
- Promising opportunities for commercialization
- Significant linkage with clinical research
- Incorporation of state and federal priorities
- Robust economic development and community engagement
- Preeminence-level performance

This document is the result of a two-semester-long, iterative, inclusive process involving stakeholders throughout the USF System. The Research Strategic Planning Committee included 51 members representing high-impact research areas from across the USF System. The full membership list is included in the Appendix. In total, we engaged more than 500 faculty, staff and community members in face-to-face conversations. The strategic planning process was facilitated by strategic advisor Mr. Bill Carlson, President of Tucker/Hall.

This strategic plan is meant to guide future investments by leadership across the USF System—Chairs, Deans, the Senior Vice President for Research, Innovation & Economic Development, the Provost, and the President. We found continued success on a sustained upward trajectory will require disciplined and focused investments.

It is also important to consider what this document was not intended to achieve. It is not meant to be an exhaustive catalogue of all the research and innovation ideas at USF. Nor does it intend to capture all the disciplinary excellence that exists throughout the USF System. It assumes that each college and unit has its own strategic plan that guides its path on future investments. This document is not meant to be a sum of all these plans, but rather a concentrated examination of opportunities that span the university system. The goal is to be greater than the sum of the parts.
1.1. USF Research Achievements over the Past 15 Years

USF’s research journey has been spectacular. USF researchers have conducted groundbreaking fundamental research, translated that research into practice that has made impact on the world, and trained leaders who are making similar breakthroughs and impact elsewhere. This exponential growth is reflected in the metrics used to rank universities and in measures used by the Florida Legislature to fund State universities. Some of these are shown in Figure 1.

Figure 1: Some of the research performance metrics for the research enterprise at USF over the last seven to 15 years. Research expenditures, issued US patents, and postdoctoral appointees are used by the State of Florida to determine State Research University Preeminence status. These are only a subset of the metrics used to measure research and innovation.
1.2. National and International Standings

USF’s national standing has risen: we are now 25th in the nation among public universities in total research expenditures. USF ranks 4th worldwide for organizations with the most AAAS Fellows named this year. USF is ranked 110th among all of the world’s universities in a ranking of faculty publications, according to High Impact Universities (2010). USF ranks 10th nationally and 13th worldwide among universities for U.S. patents granted in 2014, according to a report released by the National Academy of Inventors (NAI) and the Intellectual Property Owners Association (IPO). In 2015, USF was named an Innovation & Economic Prosperity University by the Association of Public and Land-grant Universities (APLU), in recognition of its strong commitment to economic engagement. These are no small achievements.

However, despite the solid rise in quantitative objective measures, USF’s reputational rankings have not improved. This is very starkly reflected in the Times Higher Education Rankings, where USF research had a score of more than 80 out of 100 possible points based on objective measures, but received only 3.6 out of 100 for research reputation.

Times Higher Education World University Ranking (2015-16)

![Chart showing university ranking criteria and scores]

Figure 2: Times Higher Education Rankings ranks world universities based on five criteria: teaching, international outlook, industry income, research, and citations. Each of these is given a score between 0 and 100. Each criterion is based on sub-measures, which for research are ratio of papers to staff, research grants to staff, and research reputation, each weighted differently.

1.3. National Trends

Two main conclusions emerged from recent reports by experts forecasting research and innovation for the next decade, such as: ARISE II—Advancing Research In Science and Engineering: The Role of Academia, Industry, and Government in the 21st Century, American Academy of Arts and Sciences, 2010-present, and Convergence: Facilitating Transdisciplinary Integration of Life Sciences, Physical Sciences, Engineering, and Beyond, National Academy of Sciences, National Academy of Engineering, National Academy of Medicine, 2014:

Final Draft: June 7, 2016
1) We must move beyond interdisciplinary to transdisciplinary. We must break through barriers built up between academic silos.

“Interdisciplinarity analyzes, synthesizes and harmonizes links between disciplines into a coordinated and coherent whole.

Transdisciplinarity integrates the natural, social and health sciences in a humanities context, and transcends their traditional boundaries.”  
− (Choi, B.C., & Pak, A.W., 2006, p. 351)

This requires convergence of expertise, “an approach to problem solving that integrates the knowledge, tools, and ways of thinking from multiple, disparate disciplines, including economic, social, and behavioral sciences” (National Academy of Sciences, 2014). The “tools and expertise developed within discrete disciplines are shared and combined to enable a deep conceptual and functional integration across the disciplines” (ARISE II report, 2016).

2) There is increased demand to translate academic research into tangible benefits to society. This requires a web of partnerships within USF and with private enterprise that supports convergent investigations to translate research into products and innovations.

“The . . . opportunities enabled by convergence—the coming together of insights and approaches from originally distinct fields—will make fundamental contributions in our drive to provide creative solutions to the most difficult problems facing us as a society. This convergence provides power to think beyond usual paradigms and to approach issues informed by many perspectives instead of few” (The National Research Council of The National Academies, 2014, p. vii).

2. The Process

2.1. The S.O.A.R. Process

At the first meeting, the Research Strategic Planning Committee (RSPC) members engaged in a dialogue to collectively decide on the process, timeline, and logistics required to fulfill the charge to the committee. RSPC members agreed to use the SOAR process, as opposed to the well-known SWOT paradigm. SOAR is an acronym for a new type of strategic planning focusing on Strengths, Opportunities, Aspirations and Results (Stavros, M., & Hinrichs, G., 2009). This approach focuses on strengths, and seeks to understand the whole system by including the voices of relevant stakeholders.
Figure 3: Iterative, deliberate, inclusive, and multistep process employed for strategic planning.

The process was as depicted in Figure 3 above. In the first step, RSPC members engaged in conversations about the USF System’s Strengths, Opportunities, Aspirations, and Results. The second step involved the RSPC members in a strategic planning process to draft the initial mission, vision, goals, strategies, and tactics.

At each meeting, oral deliberations were captured by a scribe, compiled and transcribed, and distributed to all members following the meeting for further comment and input, to ensure inclusion of the voices of members both present and not present at the meeting. At the next meeting, the final notes from the first meeting were revisited, discussed, and revised, based on feedback from the group. This same process occurred for each meeting. At the beginning of each meeting, RSPC members broke into small groups of approximately 6-7 members and engaged in a conversation to reflect on the inquiry. These groups then reported out to the entire committee, followed by a final collective discussion.

A public website was created and maintained, listing committee participants, agendas, meeting schedules and summaries, and the process timeline. The RSPC also established a team SharePoint site to share documents, calendars, informational resources, and other works-in-progress. E-mail communications to committee members included meeting reminders and other updates or points of discussion. The timeline of the meetings, agendas, meeting summaries, and deliberation notes are available in the Appendix.

In the third step, this process was extended to the larger community to seek their input. We cast the widest possible net to invite input from faculty and staff throughout the USF System. We scheduled four Town Halls throughout the USF System. Additionally, we held stakeholder meetings with the USF Research Council, faculty from the Institute for Advanced Discovery & Innovation, Associate Deans for Research, USF AAAS Fellows, USF Distinguished University Professors, USF Faculty Senate, and members of the USF College Research Administrators Network (CRAN). Several Deans participated in the Town Hall meetings. Town Hall meetings were advertised on USF research listservs and via e-mails from the hosting dean to all faculty members in their areas. We also held an externally focused Town Hall with invited community leaders and representatives at the USF Innovation & Economic Prosperity Summit on May 3, 2016. Stakeholder sessions were
promoted to all the members of the groups involved through communications from their
groups’ coordinators.

Some of the Town Halls and Stakeholder meetings utilized an online response-capture
system called Mentimeter, which enabled participants to anonymously submit comments to
a video screen, so all participants were able to view them and provide input and feedback.
All Town Halls and Stakeholder meeting deliberations were transcribed, along with any
Mentimeter input.

In the fourth step, RSPC members reconvened to reconsider the mission, vision, goals,
strategies, and tactics drafted in light of the feedback from the Town Halls and Stakeholder
meetings. The small group to large group format was again employed, three main themes
for the future of research at the USF System coalesced, and the mission, vision, goals,
strategies, and tactics emerged and continued to be reviewed, revised, and refined.

In the final step, the draft report was shared with senior leadership, research leadership at
colleges and units, and RSPC for comments and feedback, which was reviewed and
integrated into the final document.

3. Strengths

The USF System has a significant community of strong scholars, some concentrated in a
discipline, and some spread across departments (alphabetically listed):

<table>
<thead>
<tr>
<th>Artificial Intelligence</th>
<th>Innovative Design Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistive Robotics</td>
<td>Machine Learning</td>
</tr>
<tr>
<td>Autism</td>
<td>Marine and Coastal Issues</td>
</tr>
<tr>
<td>Biomedical Engineering</td>
<td>Materials Science and Engineering</td>
</tr>
<tr>
<td>BRIT Program in The Arts</td>
<td>Maternal and Child Health</td>
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<tr>
<td>Computer Chip Design</td>
<td>Mental Health – PTSD</td>
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<tr>
<td>Climate Change</td>
<td>Microbiome</td>
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<tr>
<td>Clinical Trials</td>
<td>Molecular Medicine &amp; Malaria</td>
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<tr>
<td>Community Engaged Research</td>
<td>Nanomedicine</td>
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<tr>
<td>Community Cultural Development</td>
<td>Neuroscience</td>
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<tr>
<td>Computer Vision and Pattern Recognition</td>
<td>Oncology Pharmacogenomics</td>
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<tr>
<td>Creative/Arts-Based Research and Practice</td>
<td>Physical Therapy and Rehabilitation</td>
</tr>
<tr>
<td>Cybersecurity</td>
<td>Performing Arts and Medicine</td>
</tr>
<tr>
<td>Data Science/Data Analytics</td>
<td>Polypharmacy</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Polytrauma</td>
</tr>
<tr>
<td>Digital Design and Animation</td>
<td>Social Determinants of Health</td>
</tr>
<tr>
<td>Drug Discovery</td>
<td>Social Marketing</td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td>Spinal Injury</td>
</tr>
<tr>
<td>Forensic Anthropology</td>
<td>Stem Cells</td>
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<tr>
<td>Geosciences – Volcanoes</td>
<td>Student Incubator</td>
</tr>
<tr>
<td>Genomics</td>
<td>Sustainable Energy</td>
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<tr>
<td>Global Health</td>
<td>Tropical Diseases</td>
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Several high-performing centers have already emerged and are working across colleges and disciplines, including (alphabetically listed):

- Research in the Arts (IRA)
- Advanced Medical Learning and Simulation (CAMLS)
- Aging and Brain Repair (CEABR)
- Alzheimer’s (Byrd Institute)
- Assistive, Rehabilitation and Robotics Technologies (CARRT)
- Chiles Center for Healthy Mothers and Babies:
  - Florida Perinatal Quality Collaborative (FPQC)
  - Transdisciplinary Research in Women’s Health
- Clean Energy Research (CERC)
- Community Design and Research (FCCDR)
- Cybersecurity (FC2)
- Diabetes
- Drug Discovery and Innovation (CDDI)
- Entrepreneurship (CFE)
- Environmental/Occupational Risk Analysis & Management (CEORAM)
- Florida Prevention Research Center (FPRC)
- Global Center for Hearing & Speech Research (GCHSR)
- Global Health Infectious Diseases (GHIDR)
- Inclusive Communities (FCIC)
- Neuromusculoskeletal Research (CNMSR)
- Oceanography (FIO)
- Sunshine Education and Research Center (SERC)
- Urban Transportation Research (CUTR)
- USF CONNECT
- USF I-Corps
- Virtualization and Applied Spatial Technology (CVAST)
- Wireless and Microwave Information Systems (WAMI)
To accelerate this kind of innovation, the USF System can tap into many regional assets (alphabetically listed):

- Florida High Tech Corridor Council, which encourages business partnerships with local companies
- Hospitals: Haley VA, Tampa General, All Children’s, Bayfront Health System, Florida Hospital
- Local research institutes such as Florida Orthopaedic Institute
- Moffitt Cancer Center & Research Institute
- Mote Marine Laboratory
- Museums and cultural institutions
- NOAA fisheries
- Tampa Bay Technology Forum
- Tampa Bay WaVE, with its FirstWaVE Venture Center in downtown Tampa, which has been highly successful in connecting high-growth startups with mentorship, early stage capital and other resources to foster a culture of innovation throughout the region
- The “C4 Intellectual Corridor” – State College, Ringling, New College, and USFSM
- USGS St. Petersburg Coastal & Marine Science Center

To address these initiatives, the committee identified many USF System interdisciplinary strengths and assets:

- USF System size and **diversity**
- USF faculty members who are **globally engaged in research-related activities**, in addition to educational endeavors
- USF faculty who frequently co-author articles with colleagues from other countries
- The **TRAIN® program** at USF Research & Innovation which facilitates communication among research administration professionals in the colleges and centrally, and offers multiple training programs leading to certification that enhance the quality and expertise of research administrators throughout the System, and ensures compliance
- The multi-college National Science Foundation (**NSF** Innovation Corps (I-Corps) **Site program**, one of only two in the state of Florida, which teaches faculty and students how to find the business idea behind their research and discover its potential for commercialization
4. Opportunities

The University of South Florida is a young but fast-growing research university with an emerging reputation in health research and scholarship. What makes us unique is our deep appreciation of the fact that the conditions that promote human health are many and interrelated—consequently, we conduct transdisciplinary research on what makes and supports healthy people, healthy communities, and a healthy environment. In this context, several opportunities exist at state, national, and international levels that USF can leverage, including (alphabetically listed):

**Healthy people**

- **Geroscience.** The state of Florida has the highest proportion of older adults in the U.S. USF can leverage this group as a natural classroom to examine social, behavioral and medical aspects of aging. Solving problems of an aging society will become essential in the 21st century. USF is poised for leadership in this emerging research domain. A white paper on this topic can be found [here](#).

- **Materials science and engineering.** Materials are fundamental to the well-being of our society. The development, improvement and use of materials influences every technology and every living system. Therefore it is of utmost importance to seek to understand how materials come to being, their structures and properties, and their performance.

- **Medical engineering** that operates at the nexus of engineering, science, clinical medicine, and public health to advance human health through fundamental biomedical explorations, discovery of treatments and cures, and advancement of health promotion and disease prevention ([NIH-Wide Strategic Plan, National Institutes of Health](#)).

- **National BRAIN Initiative.** A multi-agency effort for brain research through advancing innovative neuro-technologies that “will help reveal the underlying pathology in a vast array of brain disorders and provide new therapeutic avenues to treat, cure, and prevent neurological and psychiatric conditions, such as Alzheimer’s disease, autism, schizophrenia, depression, epilepsy, and addiction” ([NIH-wide strategic plan](#)). Furthermore, the ability to bring together engineering and computer science expertise working together with neuro-scientists is in direct alignment with better understanding and modeling of the brain and with [NSF support of brain research](#).

- **Next generation healthcare.** Issues, such as poverty and healthcare, prevention, childhood obesity, medical innovation, etc. For a more comprehensive list of these topics, visit [TEDMED](#).

- **Precision Medicine Initiative.** This initiative aims to develop treatments customized to a specific individual, rather than a generic ailment, through techniques such as
DNA-specific medicines and tailored technologies for individual care. A curriculum in genetic counseling has already been established.

- Targeted therapeutics to discover new drugs to respond to emerging diseases and combat antibiotic resistance. USF has an active transdisciplinary group of researchers engaged in the development of new therapeutic materials (e.g., nano-fluids and nano-delivery systems, designer molecules) for use in health care.

### Healthy communities

- Startups. Nationally, there is increased emphasis on start-ups, as is evident from the highly popular and growing I-Corps programs at NSF, NIH, DoD, and other federal agencies, the increasing SBIR/STTR program, and increased emphasis on entrepreneurship by the National Academy of Engineering (NAE).

- Translational medicine. Transform translational medicine on campus by bringing together basic research scientists, therapeutic discovery and non-clinical researchers, and clinical researchers. The traditional, linear pipeline for translational medicine is 15 years long and has odds of only 10,000 to 1 for a compound to make it from the lab to the clinic (Science Translational Medicine, 2013).

- Transportation. The convergence of new technologies is impacting transportation systems in ways not seen before. With a critical national portal for freight transportation, as the third most populous state, and as the destination of over 100 million tourists annually, USF experts in this domain are uniquely positioned to serve the state of Florida and the nation, with a rich research agenda that will support the goal of attracting high-tech businesses and championing the development of automated vehicle technologies.

- Undergraduate research and education. This has potential to strengthen ties with USFSP and USFSM and foster a more transdisciplinary culture early in a researcher’s career.

- USF has the capacity, ability, and potential to increase the number of PhD students and postdoctoral appointees. Several opportunities for training grants at federal agencies, targeting different areas, can be leveraged (e.g., NIH-BEST and NSF-NRT).

- Veterans' reintegration, rehabilitation and resilience. USF is an ideal location. About one-fourth of Florida’s 1.6 million veterans reside in counties served by the three USF campuses. MacDill Air Force Base hosts U.S. Central Command, U.S. Special Operations, and the 6th Air Mobility Wing. USF is also affiliated with two major VA hospitals: James A. Haley VA Hospital and C.W. Bill Young VA Medical Center in Bay Pines.
Healthy environment

- Big Data. Big Data Science is transforming a multitude of fields such as health diagnosis, energy, sustainable health, environment including marine, and cybersecurity. Apart from science and engineering, there is increased emphasis on digital tools and technologies in the humanities by the National Endowment for the Humanities (NEH) (digital humanities).

- Global change and development. Issues, such as those articulated and funded by the Gates Foundation and USAID, and sustainable energy, environment, water, and transportation figure very strongly among the 14 Grand Challenges outlined by the NAE. Arts, sciences, and health linkages can be leveraged for addressing these global issues of concern.

- Natural hazards, climate change, and coastal ecosystems. As changes to our planet’s climate and ecosystems are underway, our research is focused on improving our understanding of the physical, chemical, biological and social processes driving these changes. USF researchers and scholars seek answers to fundamental questions related to environmental change for a more sustainable world.

Given the limited resources and lofty aspirations to firmly establish USF as a top-tier research institution, a consensus emerged that USF must:

- Organize investments at the system, institution, college, and department levels to build and invest in core strengths,
- Focus on long-range research areas that are sustainable, and
- Work pro-actively, not reactively.

Several opportunity areas that are well-positioned to achieve international eminence were identified. The RSPC members believe that focused and disproportionate investment in the following areas of investigation are most likely to further USF’s long-term strategic goals (presented in alphabetical order):

- **Brain and Spinal Cord**: Neuroscience, aging, hearing loss, Alzheimer’s, brain, prosthesis, neuromorphic computing, cognitive sciences, spinal cord injury prevention and mitigation. This aligns well with the national, multi-agency, BRAIN initiative that is underway. Reverse engineering the brain is also an NAE Grand Challenge problem. USF has a history of strength in domain with many experts and research groups that cut across health-related disciplines. Bringing in cognitive psychology, computing, bio-ethics, and engineering experts would enable convergent research on this important problem. Investments would be needed to broaden the expertise in brain imaging, brain mapping, neuromorphic computing, and medical engineering solutions for the brain.

- **Data Science**: The USF System has disciplinary strengths in this area, including data analytics, financial data analysis, digital visualization, and electronic health records. However, immediate and significant investments are needed to bring this
area to competitive levels. Big Data Science is already transforming a multitude of fields, such as health diagnosis, energy, sustainable health, environment (including marine), and cybersecurity. In addition to science and engineering, there is increased emphasis on digital tools and technologies in the humanities by NEH (digital humanities). USF is applying advanced visualization technologies to address problems in the humanities, such as the worldwide preservation of cultural heritage.

- **Heart**: Basic, translational and clinical research, and cardiovascular disease-related care. Understanding the root causes of cardiovascular diseases and translating knowledge into novel therapeutics and diagnostics is critical. Unlike traditional academic departments, or single-disease focused units, the emphasis should be on biological systems research that would be applicable across the areas that contribute to cardiovascular disease such as integrated cell and organ physiology; pharmacology, nanotechnology and drug discovery; cardiac regeneration and surgery; molecular biology, genomics, and personalized medicine; and bioinformatics. Strong integration of engineering in this effort would also let USF leverage next generation medical engineering and synthetic biology solutions.

- **Human Security**: Cybersecurity, global security, food security, spread and control of infectious diseases, promoting civil societies, and social networks. USF has a world-class cohort of researchers across disciplines in infectious diseases with global presence. The state, through the Florida Center for Cybersecurity (FC²) at USF, has invested heavily in recruiting top-notch faculty looking at security and privacy of digital systems and cyber-networks. The USF System also has world-recognized scholars in global security policy, social network analysis, and food sustainability and safety.

- **Research Translation**: The translation of research ideas into products, processes, and policies that improve the human condition. The pathway involves the entire drug discovery to clinical trials pipeline, patents, licensing, startups, and community engagement. This aligns well with the national emphasis on innovation and entrepreneurship reflected in various reports. The U.S. Department of Commerce’s report on “The Competitive and Innovative Capacity of the United States” lists as one of its 10 policy proposals the need to “speed the movement of ideas from basic science labs to commercial application.” USF has significant advantages in this space and is already a national level player.

- **Water**: Purification, ocean ecology, marine science, coastal ecosystems, natural hazards, and sustainability. Our geography gives USF a distinct advantage and USF has experts in these areas, in multiple colleges, with national presence. Providing access to clean water is an NAE Grand Challenge problem. This issue is central to environmental issues and, ultimately, economic issues in the state, as was shown in the 2010 Deepwater Horizon Gulf of Mexico oil spill.
5. Aspirations
Throughout numerous stakeholder meetings, several aspirations consistently emerged:

- Be the “go-to” university for research related to congressional legislation and/or policy on topics such as security, cybersecurity, defense, food, diversity, disease, etc.
- Produce high impact research output (publications, performances, etc.) in high impact venues
- Become the #1 place to come to for entrepreneurial activities, cultural/arts activities, advice, consulting, teaching, etc.
- Become a leader for innovative problem-solving
- Develop exponential growth on campus by fostering connectivity and collaboration
- Build our reputation to match our performance

6. Results and Metrics
We expect progress could be tracked by measures such as these:

- Ranking of research expenditures by NSF (Florida Board of Governors (FLBOG))
- NIH Blue Ridge Ranking
- STEM ranking by NSF (FLBOG Preeminence)
- Number of grants and grant applications that are multi-disciplinary and also those that are industry-funded (Internal)
- Technology transfer metrics: NSF I-Corps Teams, patents, number of clinical trials, licenses, and startups (FLBOG Preeminence)
- Number of large grants applied for and received (Internal)
- Effective Facilities & Administration (F&A) rate (Internal)
- Publications and citations (Times Higher Ed, Association of American Universities (AAU))
- Investment made towards fostering transdisciplinary research
- Number of faculty and support staff
- Number of PhD graduates (FLBOG Preeminence, AAU)
- Number of postdoctoral appointees (FLBOG Preeminence, AAU)
- Number of faculty awards and honors, National Academy Members (AAU)
7. Mission and Vision

**Mission**: Create new knowledge and solutions for global problems, while preparing students to become the next generation of researchers and leaders, able to serve the needs of society

**Vision**: The USF System aspires to achieve:

- Recognition: Perform at the level of a top-tier research and innovation university system and be recognized as such
- Convergence: Maximize transdisciplinary collaboration for convergence around emerging areas of global significance
- Impact: Perform at the level of a top-tier university system for translating research into products and processes that impact communities

8. Goals, Strategies, Tactics

8.1. Recognition

**Goal 1: Rise from current 25th place ranking among public research universities ranked by NSF**

- Strategy – Develop research infrastructure for transdisciplinary research
  - Tactic – Create new thematic convergence-focused center where researchers from a variety of disciplines interact, a place that is conducive to creating synergy, and which brings people in from other universities. Possible name: “SMART-X” for “Solutions Made After Revolutionary Thinking.”
  - Tactic – Create a single, central, electronic dashboard for faculty expertise at USF, pulled from all of USF’s existing online grant applications and other sites, to build a rich, robust database to support and encourage collaboration.
  - Tactic – Consider restructuring some existing centers and institutes around areas of strategic interest.
  - Tactic – Inventory and enhance shared next-generation core facilities, such as cloud computing, nanobio fabrication, transgenic core, Omic (genomics and sequencing) core, etc.
  - Tactic – Foster basic and clinical collaborations to generate new perspectives. Build MD-PhD program.

- Strategy – Seed fund transdisciplinary convergence in research
  - Tactic – Sponsor a large research initiative targeting specific transdisciplinary research areas – rather than any one academic silo.
  - Tactic – Issue an open call for proposals for transdisciplinary research, peer reviewed.
• Tactic – Seed fund the development of common research resources such as datasets, repositories, and equipment that facilitates transdisciplinary research.
• Tactic – Initiate large pilot grant programs that enable preliminary data collection to be competitive for large grants.

• Strategy – Increase research capacity
  • Tactic – Create a process to retain productive faculty and staff.
  • Tactic – Make cluster hires that expand current research strengths.
  • Tactic – Hire high quality support staff to keep up with faculty hires.
  • Tactic – Increase the quality and number of doctoral students and postdoctoral appointees.
  • Tactic – Provide merit-based faculty release from other responsibilities to build interdisciplinary relationships and obtain research funds.

Goal 2: Increase brand recognition for research and innovation activities at USF

• Strategy – Increase visibility of USF System research among public and academic communities
  • Tactic – Define the research and innovation brand.
  • Tactic – Enhance communication of USF System and institution (USF, USFSP, and USFSM) research to the public, not only locally, but also on national and international levels.
  • Tactic – Invest in targeted research-related advertising during fall and winter to maximize exposure to out-of-state visitors and seasonal residents.
  • Tactic – Apply transdisciplinary approaches to communications and marketing to expand public and academic audiences and leverage the human impact to drive a broader awareness and attract diverse media interest.
  • Tactic – Develop an easy-to-browse webpage proclaiming USF's achievements.

• Strategy – Increase opportunities for connection with external peers who drive the university reputation measures.
  • Tactic – Provide more funds for hosting national / international conferences and workshops.
  • Tactic – Cultivate strategic relationships with political entities, press, and alumni.
  • Tactic – Engage and take external leadership roles in peer groups at all administrative levels at the university. For example, the National Academy of Inventors is an excellent venue for interacting with vice presidents for research at other institutions. Other organization include the Association of Public and Land-grant Universities (APLU) for presidents, organizations for deans, etc.
• Strategy – Help faculty gain external honor and recognition from distinguished professional organizations
  o Tactic – Increase recognition of external awards and honors at the college and department levels.
  o Tactic – Expand the external faculty honors and awards program to help faculty gain recognition from external groups.
  o Tactic – Create opportunities for engagement of USF faculty with members of the National Academies of Science, Engineering and Medicine, through the USF Institute for Advanced Discovery & Innovation and the National Academy of Inventors, with the goal of promoting faculty induction into those bodies in the future.
  o Tactic – Create a program to coach faculty and/or administrators on how to talk with the press, etc., effectively, (e.g., engage with The Conversation to promote USF System faculty expertise on a national level).
  o Tactic – Integrate scientific and creative processes within disciplines to increase the translational participation of fine arts and humanities.

8.2. Convergence

Goal 3: Foster transdisciplinary research culture and productivity throughout the USF System

• Strategy – Increase incentives and decrease barriers for collaborations
  o Tactic – Develop novel reward structures to incentivize faculty transdisciplinary collaborations.
  o Tactic – Recognize and count joint proposals, papers, and grants.
  o Tactic – Establish trustworthy procedures to address bureaucratic obstacles/barriers to collaboration (e.g., Tenure & Promotion (T&P) credit, investment of Facilities & Administrative (F&A) costs).
  o Tactic – Provide opportunities for experimental courses, collaborative teaching, and “sabbaticals” to develop new courses. Consider joint and/or in-situ sabbaticals to develop ideas and establish new connections.
  o Tactic – Allow flexible course requirements for graduate students and easy exchange of graduate students across disciplines.
  o Tactic – Improve PhD program recruitment and training support.

• Strategy – Increase collaborative research within the university system
  o Tactic – Facilitate team-building.
  o Tactic – Encourage social events for presentations and interactions (e.g., “speed dating”) with shared interests in convergence problems.
  o Tactic – Encourage joint appointments across departments and schools.
  o Tactic – Share research success stories (e.g., new grants received, significant research published, awards and honors, etc.) through social media and traditional mechanisms (e.g., email, newsletters).
Tactic – Have physical meeting spaces on campus that are conducive to faculty collaboration and conducting collaborative research.

- Strategy – Build and scale-up research support at USFSP and USFSM
  - Tactic – Provide release time for research.
  - Tactic – Increase travel support for faculty and students.
  - Tactic – Build post-award support.
  - Tactic – Increase access to graduate students and postdoctoral appointees across institutions, leading, over time, to PhD programs in niche disciplines.
  - Tactic – Shift funding priorities toward sustaining research (e.g., research-active faculty hires, staff support for research, and space for research).

8.3. Impact

Goal 4: Increase the application and impact of USF research

- Strategy – Cultivate a startup culture
  - Tactic – Build on the I-Corps program to train faculty and students.
  - Tactic – Build Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) funding opportunities.
  - Tactic – Institute an early stage fund, supported through private donations.
  - Tactic – Initiate a USF fundraising campaign and leverage against other private asks to support seed capital and follow-on venture investment.

- Strategy – Foster university-industry collaborations
  - Tactic – Increase the pipeline from translational research to products (including intellectual property) for public benefit.
  - Tactic – Continue building on the incubation support (Tampa Bay Technology Incubator) in the USF Research Park.
  - Tactic – Expand and network existing executive-in-residence programs across the institutions to bring insights from practitioners in industry.

- Strategy – Build strategic research partnerships among local points of excellence
  - Tactic – Expand effective technical services/research master agreements with more local/regional governments and partners.
  - Tactic – Build connection with the transplant program at Tampa General Hospital—the 4th highest volume transplant center in the country (OPTN, 2011). A closer affiliation would provide multiple new research opportunities.

- Strategy – Enhance community-engaged research and economic development
  - Tactic – Connect with unique population groups such as retirees, coastal communities, and veterans to research quality of life, health, environmental and societal issues.
  - Tactic – Increase business development and incubation.
- Tactic – Create a dynamic live/work/play environment to attract highly skilled technology professionals to the region.
- Tactic – Work with community partners to enhance the development of Tampa, including downtown and the area surrounding the university.

9. Process

USF Research & Innovation (USFRI) and the Senior Vice President for Research, Innovation & Economic Development (SVPR) are responsible for monitoring the progress of the ideas presented in this plan. The SVPR will report to the President on a regular basis on the progress. A publicly available research dashboard will show the progress to the key metrics.

Progress on the strategic ideas in this report will require the joint effort of all research stakeholders, including college associate deans for research (ADR), members of the Research Advisory Committee (RAC), the Faculty Senate Research Council (RC), Sponsored Research (SR), and the Technology Transfer Office/Patents & Licensing (TTO/P&L), etc. All have either a direct reporting relationship to the SVPR (SR and TTO/P&L) or work with the SVPR in a collaborative or advisory capacity (ADR, RC, and RAC).

The different committees and units within USFRI will be responsible for monitoring aspects of the plan that fall under their purview. The ADRs will be responsible for parts of the plans that intersect with their colleges, engage in transdisciplinary issues and projects guided by this report, and will work with the Deans on matter that intersect with academic issues such as tenure, promotion, recognition, and hiring. The RAC should use this document to guide future investments of the strategic investment pool. The RC should use this document to guide investments of the internal grants program. USFRI units, such as SR and TTO/P&L, should use this document to guide progress on the measures and strategies that relate to their responsibilities.
10. Appendix

A. Charge Letter  
B. Committee Members  
C. Timeline  
D. Meeting Schedule  
E. Town Hall Flyer  
F. Meeting Proceedings*  
   *Copies available on file in USF Research & Innovation  
G. Bibliography of Resources*  
   *Copies available on file in USF Research & Innovation  
H. Convergence Abstract  
I. Preeminence Criteria  

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