Recommendations of the Task Force on Creative Computing and Interactive Technology

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Task Force Members

Gary Brubaker, Director, The Guildhall
Marc Christensen, Dean, Lyle School of Engineering
Anthony Cuevas, Department of Teaching and Learning, Simmons School of Education and Human Development
Thomas DiPiero (Chair), Dean, Dedman College of Humanities and Sciences
Scott Douglas, Department of Electrical Engineering, Lyle School of Engineering
Ira Greenberg, Director, Center of Creative Computation, Meadows School of the Arts; and Department of Computer Science, Lyle School of Engineering
Jo Guldi, Department of History, Dedman College of Humanities and Sciences
Samuel Holland, Dean, Meadows School of the Arts

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INQuiry

Introduction

"Inquiry" signifies a search for truth, information, or knowledge. In this report, we propose a new academic entity at SMU. This entity, **INQuiry**, will advance interdisciplinary innovation based in data-driven, creative and interactive technologies, making new teaching, research, and creative opportunities available to faculty and students across the university. **INQuiry** will incubate a new academic model at SMU, building on existing strengths in tool-building, interactive experience, and the critical manipulation and deployment of data about people and society, for research-based and creative experience. **INQuiry** will span the entire university, reaching all undergraduates, beginning and advanced PhD students, postdoctoral fellows, and faculty of all stripes.

INQuiry takes full advantage of a number of SMU's signature strengths:

The Guildhall: Creative and interactive design and experience
The Guildhall specializes in the *depth* of game design and virtual experiences, doing one thing, through four specializations, very well. It furthermore teaches video game literacy and analysis. Students deconstruct games and participate in critical analysis of games and their experience.
Guildhall graduates are among the best programmers of C++, surpassing industry standards for high-quality game design. They also learn to dabble in Unreal's Blueprints and other game-specific programming engines through scripting and programming assignments within a class. They are accomplished coders.

To enhance the Guildhall's reach to a broader segment of the undergraduate community, we would return to gaming's roots in social and aesthetic phenomena such as theater, in which

participants imagine themselves in difficult situations where complex problems involving emotion, ethics, and other human concerns are showcased. Gaming can simulate ethical, political, economic, and philosophical decisions, and reproduce situations one could only otherwise experience textually. Guildhall faculty collaborating with experts in areas such as history, psychology, marketing, law, dance, or human development can enrich the study of those disciplines—and many, many others—by offering immersive, nearly real-life situations.

Creative Computation
Together with the Guildhall, Creative Computation offers extensive instruction in transdisciplinary coding—an inclusive *coding for all* approach. Creative Computation complements the Guildhall in the breadth of areas in which coding is applied. Creative Computation deploys visualization as a universal tool for understanding complex problems or for appreciating the possibilities of different kinds of human creation individually elaborated by viewers/users who become co-creators in the act of viewing or participating.

Unlike a computer science program, which establishes areas of depth in a number of interrelated areas such as artificial intelligence or computer architecture, Creative Computation stakes its claim in the breadth of areas to which it brings interactivity, visualization and the manipulation of data. As students gain expertise while working on a challenge, they learn what specific tools they need to solve a problem and they develop the expertise to build the tools required to expedite the problem most efficiently. Creative Computation's breadth is enhanced by depth from other areas.

Digital Humanities/Digital Social Sciences
These disciplines apply techniques of data extraction, manipulation, and visualization developed in the other two domains outlined herein to investigate human past and present social and aesthetic creations, including artistic and cognitive constructions, organizational and governmental structures, and the meaningful past and present of the human condition.

The digital humanities and social sciences allow us to ask questions not before possible because of the sheer scale that big data permits. Furthermore, owing to the types of visualization that both creative computing and the Guildhall permit, these new disciplines help us understand the world through simulations, re-creations, and interactive scenarios of past and present events. The methods of analysis associated with the humanities and the social sciences furthermore illuminate the social, aesthetic, political, and ethical dimensions of the technological tools that all too often pass as transparent mediators between human beings and the world. All representations and interventions are form, these disciplines maintain, and subject to rigorous analysis.

In order to take full advantage of the integration of these strengths elaborated more fully herein, *the task force strongly recommends that The Guildhall be brought to the main campus*, housed within the new Ford Research Building or some other central and appropriate space.

INQuiry is the conceptual apparatus for synthesizing these areas of teaching and research, and it is at the same time the foundation—in both the material and abstract senses—for administering and promoting undergraduate instruction and faculty/student research in creative and interactive technologies. It is not a discipline in and of itself; it is, instead, the space for incubating and sending

forth teaching and research in the domain of creative and interactive technologies. In some respects it is akin to a program or a center serving the entire university (a center for Twenty-First Century Studies, for example, or one for the Future of Cities), but it differs from a center in that it may house faculty. INQuiry should not be a school, however, because it must not be perceived as in competition with other units in the university. Structural and organizational suggestions are elaborated more fully below.

(For further examples of synergies among the three entities at the foundation of INQuiry, see Appendix A: "INQuiry's Intellectual Foundations and Composition".)

INQuiry consists of three interrelated parts:

1. **INQuiry will provide comprehensive, trans-university, actionable information literacy for the twenty-first-century,** designed to reach all SMU undergraduates beginning in their first semester.

2. **INQuiry will harbor ongoing innovative research** at SMU, bringing together scattered labs and support sectors into one coherent whole and making SMU a mature center of academic research and an incubator of research in emergent fields.

3. **INQuiry will connect to area industry, nonprofits, state, religious, and cultural institutions** with the goal of sharing SMU-based innovation and showing off faculty and student innovation to potential clients in all sectors.

INQuiry can be scaled and it can be rolled out gradually. In its mature form, INQuiry will transform pedagogy, incubate research, and forge new relationships with external entities.

Following are detailed discussions of INQuiry's component parts, its relationship to Central University Libraries, to faculty research, and to external entities. We also discuss structural possibilities and governance models.

1) INQuiry: Pedagogy Transformed

The SMU Undergraduate Experience at INQuiry

The keystone of INQuiry for SMU students is the **group-based, interdisciplinary, data-driven projects required of all first-year students beginning in their first semester.** These projects, as well as optional lab-based work and group work in later years, enroll undergraduates and their graduate student proctors in INQuiry's core set of values (fearless engagement of data, interdisciplinary collaboration, new media, and disruption).

In Every SMU Student's First Year…

Every first-year student participates in a fall-semester lecture series and a project-based teamwork program designed to initiate them into a culture of technological literacy and inquiry-based, self-directed innovating in learning.

- The entire freshman class assembles weekly in McFarlin Auditorium for a **program of lectures from world-class visionary leaders** designed to **inspire them to face the grand challenges of our day with data, creative responses, and interactive technology.**
- **Students are grouped in small interdisciplinary teams** directed by a graduate student proctor. Groups are assigned based on residential commons affiliations, and the different residential groups compete for awards based on their projects. This structure builds loyalty, competition, and a basis for student-to-student mentoring.
- To complete their projects, students turn to just-in-time **workshops,** which offer them the skills of data literacy necessary for their project (e.g., Python programming, ArcGIS, data visualization, etc.). The workshop requirement of first-semester INQuiry helps to build a culture among the students of self-initiated learning. Additionally, these workshops will be available to all members of the SMU community.
- **First-year students develop, test, and conclude their projects,** writing up the results, and presenting at a competition among residential commons. **University sponsors** from industry, government, arts, religious, and nonprofit sectors judge the projects and award the best use of technology, most innovative idea, most imaginative use of interactivity, best solution to a grand challenge, etc.

As Upperclassmen, Motivated Students Can Continue to Engage INQuiry

In their junior year, students can apply to work in faculty-led research labs (see below, "Incubating Research") comprised of faculty, postdocs, graduate students, and other undergraduates. These labs are the logical extension of what students did in their first year, or, perhaps more accurately, they are the intellectual experiences that the first-year program was preparing students for. While students' academic experience in these labs will not be through formal coursework, they will receive credit calculated on the number of hours they do, and they will be evaluated based on their specific contribution to the research project. Furthermore, they will get appropriate UC credit based on the kind of work they do. Students who participate in junior and

senior labs will finish their SMU experience with a certificate or other transcripted acknowledgement as appropriate.

Seniors Can Continue Group Work for a Capstone

Students can also apply for a capstone experience, which would be an extension or continuation of the group work they did for their first year. These students must complete a sufficient number of workshops to gain fluency in code and data extraction and manipulation that will allow them to master the data in their field of study. With permission from affiliated faculty, an INQuiry Capstone project can serve as a senior thesis in other departments such as computer science.

Opportunities for Graduate Students in INQuiry

PhD students will gain valuable teaching experience by participating in INQuiry. Both the freshman group experience and the workshops will provide opportunities for graduate students to distinguish themselves as teachers in a new model of interdisciplinary, action-based, hands-on learning.

- Graduate students will proctor and oversee undergraduate research groups
- Graduate students will work in faculty research labs, along with postdoctoral fellows and undergraduates

Teaching Values at INQuiry

INQuiry will bring to SMU students a series of digital inquiry project experiences that mediate between and among the disciplines in order to illuminate the often overlooked aspects they share. **INQuiry will bring digital, interactive, interdisciplinary training to the university's general education curriculum, while resonating with its current structure and goals.**

INQuiry will teach students to

A. Fearlessly engage data and create ex nihilo.

B. Collaborate on intellectually diverse interdisciplinary teams.

C. Embrace the media of the interactive era.

D. Contemplate the impact of innovations and historical disruption on society.

(For more detailed analysis of INQuiry's teaching philosophy, see Appendix B: "INQuiry's Philosophy of Teaching.". For what student experiences might look like, see Appendix C: "Stories From the Future")

2) INQuiry: Incubating Research

INQuiry will harbor ongoing innovative research in the extraction, manipulation, and deployment of data in the service of larger questions and challenges facing humanity in the twenty-first century. INQuiry additionally champions creative expression in and of itself and as a component of problem-solving.

We live in an age of information overload; everyone now broadcasts information instantaneously, but no one, including companies such as Facebook or Google, has as yet devised an automatic way to arrive at a consensus, or to distinguish fact from fiction. Historically, **information overload has produced lapses in knowledge and resulting failures to act**. During the renaissance, discoveries of new plant specimens were so numerous that the existing encyclopedias failed to keep up with them—failing to keep track of new plant discoveries for a hundred years, before Linnaeus came along with a new system capable of organizing the whole. **Just so, our own era of information overload requires an integrated response.** Solutions to information overload will come from computationalists who understand Aristotle as well as C++. The humanities and social sciences, computationalists, and designers together must ask **how information can be deployed, integrated, analyzed, and experienced in the ways needed by a society struggling with information overload.**

INQuiry's three nodes—the Guildhall, Creative Computing, and the Digital Humanities —will specialize in tool-building, interactive experience, and engaging with rich data about institutions and societies. With these three dimensions combined, INQuiry possesses a uniquely rich way of interacting with an information-rich society. In fact, no other institution or center has the *breadth* of disciplinary ways of reflecting upon technology or the *depth* of training in digital tools and their design. This combination of assets will mark out INQuiry against all other programs in new media, computer science, science and technology, or the digital humanities, to create an institution marked by powerful, new synergies.

Creative and interactive technology is the form of research, production, and creative expression of the future. Just as the printing press changed the production and dissemination of knowledge, likewise information and interaction technologies are in the process of transforming all institutions and relationships. Our university must be among the very first to respond to these challenges by cultivating new relationships to technology and for all members of our community. At SMU, INQuiry will grow out of existing entities whose breadth and depth contributes to creative and interactive ways of knowing.

Existing nodes of creative research will amplify one another by interacting within a common space. SMU's existing strengths in creative technology deserve to be cultivated so that our top-ranked programs can remain competitive into another decade and more.

As it does in instruction, in research INQuiry will bring together the Guildhall, Creative Computing, and Digital Humanities (and Social Sciences) so that

- The specialties of each entity can amplify the others' strengths. The Guildhall provides training in interactive design; Creative Computing provides tool-building; and Digital

Humanities provide critical, content-rich engagement with data. Each will build on the others with, for example, the digital humanities providing social science data about democracy to be visualized in Creative Computing, or turned into educational video-games for elementary school students at the Guildhall.

- **Opportunities for creative research can include all disciplines and all faculty.**
    - Research will be seeded by new competitive funding opportunities for the incubation of innovative methods in labs that promote interdisciplinary work. Funding may come from local agencies, museums, businesses, and organizations in the form of projects and/or material support. We will also invite first-class researchers from the strongest institutions in the world to spend postdoctoral or faculty fellowships at SMU.
    - In order for the interdisciplinary innovation of INQuiry to percolate through the university, **interdisciplinary teams of researchers from across the university and visiting faculty from other universities will be invited to apply to INQuiry** for short-term fellowships providing researchers with lab space and support.
    - Faculty INQuiry labs will form the basis for advanced undergraduate, graduate student, and postdoctoral fellow participation. Faculty PIs for INQuiry labs might be granted some teaching relief in recognition of the intensity of their work.
- Data science and technological service can support faculty innovation in data-rich fields with professional computer science support.

Trans-university cluster hires for faculty who can participate in INQuiry should be strongly encouraged. A university-wide conversation should occur to determine the scope of new hires, perhaps in concert with the recommendations of the Task Force on Scholarly Research and Creative Impact.

The INQubator

The INQuiry program's teaching and research will be supported by the INQubator, an expanded digital scholarship lab with professional librarians as coordinators and partners. Just as INQuiry research problems require interdisciplinary problem solving, the INQuiry program itself requires a collaborative, organizational structure that integrates all resources in one interdisciplinary hub. To support the investigation of innovative research problems that use creative technology solutions, the INQubator will be the ecosystem that sustains the program and serves as an intellectual meeting ground, technology sandbox, source of educational support, and center of expertise. The INQubator capitalizes on the library's hub Third Space environment by bringing together scholars in a more informal environment of productivity which addresses the needs of the broader campus community.

(Un)Common Space

The **INQubator** will be located in a prominent space on campus, where it will display the unfolding possibilities and achievements of INQuiry to new students and visitors. WIth a large dedicated space for the INQubator, the INQuiry program will have a neutral, centralized location accessible to the community at large.

Setting: The space will take cues from innovative learning spaces in other libraries. It will also incorporate ideas from co-working spaces and innovative work environments. The space should also feel like the Perot Museum or the Oregon Museum of Science & Industry in that it encourages, inspires and empowers students and faculty to interact with new technologies. Overall, it will be a versatile space which keeps up with new technology trends. This would be a draw for prospective students and their parents during tours. Most tour groups visit the Prothro Learning Commons and the Collaborative Commons. Now, they can add the INQubator as one of their destinations and see this creative and highly innovative space.

Open, Collaborative Space: The main space of the INQuiry will be an open collaborative area which is very versatile. The space will have flexible furniture configurations and be available for studying and collaborative work. In addition to studying, collaboration, and tutoring, the space could also host presentations, receptions, discussions, and gaming events.

What's Inside the INQubator?

A Visual Surround: Large displays will greet the visitor, showing off the work of data visualization classes, undergraduate research pods, and faculty researchers. Live feeds from the classroom will demonstrate, real-time, how researchers are manipulating their data. Cycling feeds will bring visitors up-to-date with recent TED-style talks from distinguished visitors.

Innovative Classrooms: Flexible classroom spaces will be needed for larger just-in-time workshops. Spaces that allow active teaching techniques and rapid rearrangement for different teaching methodologies will be needed for this program. Moveable furniture, whiteboards, small mobile projectors and laptops will serve this space.

The Labs: There would be multiple labs to support the needs of the INQuiry research teams. The labs could be a versatile group projects space with whiteboard walls, interactive whiteboards which can capture new ideas, audio recording equipment to help document brainstorming discussions, and more to assist in driving innovative and creative thinking. These spaces would also be needed for the increased number of workshops to support INQuiry.

The Hub: To encourage interdisciplinary exchange, there will be a central meeting location for all faculty members and graduate students. This space will be a lounge area with mixed seating to include research spaces, work spaces, and casual seating. This space can also be flexible in order to hold informal gatherings and presentations or other types of faculty events. The libraries could partner with the Faculty Club to host events. This space will be designed to promote interdisciplinary conversations and interactions helping to further informal connections.

Technology Checkout: The INQubator would provide access to newer technologies that faculty, students, and staff can utilize for projects. The libraries currently offer scanning equipment, ChromeBooks, iPads, calculators, and headphones. Technology available for checkout will follow the latest trends and developments in interactive technology..

(For examples of workshops offered in conjunction with SMU's libraries and the INQubator, see Appendix D: "Library Workshop Examples")

3) INQuiry: Connecting with the World

Creating an interdisciplinary digital scholarship lab in a centralized location at the university offers opportunities to collaborate and share resources with the larger Dallas community, including NGO's, museums, religious institutions, foundations, hospitals, organs of governance, industry, technology, finance, etc. Regular talks, seminars, demonstrations, hackathons, and other sorts of activities will involve the entire Dallas community. The goal is to make INQuiry the go-to place for innovation in problem-solving and creative endeavor.

1. New avenues will be opened up for **external institutions to sponsor work conducted by SMU faculty and students.** INQubator memberships can be offered, much like Dedman memberships, to give access to the community to INQubator technologies and workshops. Partnerships with private schools can be established to offer students within the Dallas area access to the INQubator technologies and resources.
    - Members of external entities will be invited to submit to INQuiry their challenges and problems for adoption by student and faculty teams.
    - **Leaders** of creative organizations outside the academy **will be invited to co-create new models for expression and for training.**
2. There will be multiple naming opportunities are available with the various spaces within the INQubator
3. Technology companies on the cutting edge may be encouraged to donate new tech equipment as an "early release" opportunity to gather feedback in our INQubator.
4. **INQuiry will be responsible for developing technologically advanced, interactive venues for sharing all interdisciplinary research at SMU**
    - There should be an annual or bi-annual competition organized among student groups.
    - Presentations of research should be cultivated such that the experience appeals to the audiences of TED and SXSW interactive as a *major event* for technology companies, nonprofits, investors, and cultural leaders in the greater region.
5. INQuiry should consequently have a close working relationship with Development and External Affairs.

(For additional details, refer to Appendix E: "External Partnerships")

4) INQuiry and SMU's Strategic Plan

INQuiry responds to a significant portion of the goals and objectives in SMU's Second Century Strategic Plan. **INQuiry supports nearly every component of SMU's plan to enhance the academic quality and stature of the university and to improve teaching and learning.** Because of its innovative approach to twenty-first century learning, INQuiry will allow the university to recruit the very best students and faculty to SMU, and the University's investment in this program will also attract top staff. INQuiry will also

dramatically reposition the Central University Libraries system as a key academic player, since librarians and other staff in CUL will be heavily involved in student learning. INQuiry supports the core pedagogical and research missions of the university.

Additionally, INQuiry will significantly enhance teaching and learning through what the task force believes to be a truly innovative, interdisciplinary curriculum designed to meet the needs of the modern city, state, nation, and world. INQuiry will position all students to be **lifelong learners**, and each of them will develop significant experience in practical, field-based, collaborative learning experiences—the kinds of **experiences employers say they seek.**

Furthermore, INQuiry will strongly encourage campus-wide interdisciplinary research for undergraduates, graduate students, and faculty. By providing new avenues for external funding (including from corporations and foundations), INQuiry will improve our research infrastructure and the quality of our external grant applications, and it will help us to fund additional doctoral student fellowships. Irrespective of the paths SMU takes in the future, INQuiry will incubate research that has **strong technology transfer potentials.**

Finally, the collaborative learning environment at INQuiry will further enhance the campus experience for SMU undergraduates and graduate students. Students will learn to assume leadership roles, and competition within the residential commons will help continue to build a supportive, challenging, and academically rich environment for all students across the university.

5) Entity and Governance

Organizational Options

The Creative and Interactive Technology Task Force considered three primary options for the type of entity that would be most useful for combining and/or integrating creative computation, computer gaming, and digital humanities at SMU. We considered a Center or Institute that focuses on a specific theme, a traditional School, and a Hybrid option with elements of each that may take the form of a Network or Alliance.

Center/Institute **Hybrid** **School**

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The Creative and Interactive Computing Task Force applied the following guiding principles to determine the best organizational form for INQuiry:

1. The organizational form must create the grounds for interdisciplinary faculty across schools to model institutional innovation, including appropriate teaching obligations, research support and rewards for advancement.

2. The entity must combine or integrate creative computation, computer gaming (Guildhall), and digital humanities in a single academic unit in a way that strengthens their existing programs and allows them collectively to increase their impact on the university community.
3. The entity must be able to continue offering innovative undergraduate and graduate courses, degree programs and non-degree programs associated with creative and interactive technology with Dean-level authority.
4. The entity must be able to offer tenure-line faculty positions in order to attract outstanding professors and support innovative research projects. Tenured faculty are essential to maintain the institutional culture and review and reward the producers of innovative work according to the interdisciplinary, creative values of INQuiry's agenda.
5. The entity needs shared access and technical support for creative and interactive technologies across research and teaching groups.
6. The entity needs digitally-trained support staff to help faculty and students reach their full potential and pursue global research opportunities.
7. The entity needs to create and maintain strong connections with every school and department across campus to ensure meaningful collaboration and strategic impact.

We outline three options below: a center/institute, school, and hybrid. As described below, we strongly endorse the **hybrid** option because it has the benefits of the other two, without many of the detractors characterizing them.

Center/Institute
We considered how INQuiry could bring together faculty with an interest in creative and interactive technology as an interdisciplinary Institute, combining creative computation, computer gaming, and digital humanities, as well as faculty from other departments and schools with similar interests. An Institute could bring the faculty from these current groups together in a physical space with similar interests and provide common goals that motivate the combined faculty to share interrelated outcomes beyond their current scope.

The Guildhall and CCC are currently Centers, so this might best be accomplished with an Institute that brings together the existing centers under a common entity and allowing faculty in digital humanities and other related fields to join forces within the Institute. If the Institute/Center is set up within a school, it can provide a home for tenure-line and non-tenure line faculty and would accommodate core and affiliated faculty. However, it would not be positioned to support the entire university community if established within a school.

If the Institute/Center is set up as a university-wide entity, it would be positioned to support the entire university. However, faculty tenure-line positions are currently held within schools so the university-wide Institute would not provide a home for tenure-line faculty except as joint appointments. This would limit the ability of INQuiry to recruit top faculty and students. It also retains the complex governance structure of the current Guildhall. This reduces the agility to create new programs and degrees. Furthermore, it would require finding joint appointments for Guildhall faculty to ensure they have primary homes in an academic unit that can offer tenure.

Institutes are typically associated with a physical and organizational infrastructure for conducting research so this would need to be set up as a specific type of Academic Institute that is positioned to

support and collaborate with the entire university in an impactful way on teaching, research and service related to creative and interactive technology.

School

As a School, INQuiry would operate as an independent academic unit with consistent governance standards and resourcing models. There are a lot of advantages to being a school. This would ensure Dean-level governance, budget authorization, Development support, and a clear mandate. This could position creative computation, computer gaming, and digital humanities as departments within a common school to better support collaboration on new programs and grow existing programs by leveraging resources. Establishing a new School of Creative and Interactive Technology would demonstrate our commitment to leading in this growing interdisciplinary area and position us to attract top faculty to join in our mission.

However, as a new School, INQuiry would be positioned to compete with existing schools in a traditional model rather than to serve the university as a whole and collaborate across schools on signature educational experiences and innovative interdisciplinary academic programs and research. In addition, the combination of creative computation, computer gaming, and digital humanities as departments within a school would not necessarily ensure synergies unless there is an overarching mandate that pulls them together.

Hybrid (Recommended)

We believe a hybrid model offers the most useful entity for integrating creative computation, computer gaming, and digital humanities at SMU because it combines the **stability** and **stature** of a School with the **flexibility** and **focus** of an Institute or Center.

The establishment of a hybrid academic entity would communicate internally and externally that SMU is taking a new approach to interdisciplinary teaching and research. In addition, this hybrid entity would provide an opportunity to highlight the strengths of our existing programs and communicate that we are committed to leading in this growing interdisciplinary area.

To be successful, the hybrid INQuiry model needs to:

A. Be a university-wide entity positioned to support all schools and programs.
B. Have a clear organizational structure and physical presence, including dedicated space to bring together faculty from creative computation, computer gaming (Guildhall) and digital humanities, as well as connections with related labs across campus.
C. Provide a home for tenure-line faculty (with or without joint appointments) and non-tenure line faculty. It needs to be positioned to host a rotating faculty who receive the equivalent of fellowships to pursue promising innovations based in creative, interdisciplinary research, especially those stemming from interactive technology, in the form of special labs.
D. Ensure Dean-level governance, budget and curriculum authority to streamline the creation of innovative programs.
E. Have dedicated Development support to raise funds to strengthen existing programs and grow in new areas.

F. Establish clear pathways for faculty from any school working in creative and interactive technologies to collaborate and participate.

In addition, the hybrid INQuiry needs a clear overarching interdisciplinary mandate to ensure that the combined groups continue to grow as leaders in their respective areas and collaborate on new interdisciplinary programs outside of their areas to create synergies beyond their current programs. INQuiry project experiences will be the initial impetus for bringing the existing creative and interactive technology programs together to design new project-based learning courses that leverage their strengths.

Ties with SMU Libraries

Librarians are *bridge-builders* among the disciplines and *curators* of the best information available in the research university. The library's traditional roles will endure in the INQubator, where librarians will be vital to connecting students with data and expertise. A library role at the INQubator will allow students to "check out" data, experts, and experimental technology through a system of workshops and technology-on-loan. Access to expertise will be provided through workshops, office hours, tutoring, online tutorials, and more. This ecosystem will include experts on the INQuiry topics, including faculty members, librarians, postdoctoral fellows, and visiting scholars.

The library will service the technology "check out" system at the INQubator. Librarians will staff many of the short workshops on offer at the INQubator. Librarians will also expand their role by serving as mentors for the INQuiry program. In our current model, librarians with subject expertise are assigned to specific disciplines to support the research needs of students and faculty. At the INQubator, one assigned librarian will be available to each freshman group throughout their project for individual, tailored research consultations with students, which will expand upon and complement information literacy workshops. Near the end of the INQuiry projects, librarians will assist the pod with ensuring the ethical and responsible use of information and next steps including issues related to citations, copyright, author's rights, publishing, etc. The relationships that the librarians build in these research teams can continue into the senior-level capstone project.

The Data Library. Librarians will act as data mentors, helping students to become adept at obtaining and restructuring the data they need for insight. Each research pod will be assigned their own data mentor who will meet with students individually and as a group. In an initial meeting, the data mentor will start to build their relationship and introduce students to the INQubator, as well as orient students to potential information sources and resources that will be useful for the problem or task.

Data mentors can help students construct their questions during this meeting and guide students to critically think about their problem and related issues. As students work on their projects, data mentors will connect students with experts, technologies, workshops, and resources to support their investigation.

Other expertise will also be available on call. Graduate specialists who are majoring in the field will teach workshops and host office hours to assist on projects. Advanced students will serve as tutors for INQuiry topics.

(For examples of potential library workshop curricula, see Appendix D: "Library Workshop Examples")

6) Rolling Out INQuiry

While INQuiry will generate new and exciting educational experiences, INQuiry cannot simply be an "add-on" to SMU's existing educational requirements and processes. To be successful, INQuiry should and will have to be incorporated into many efforts already in place at SMU, such as general education requirements and resource scheduling. Ultimately, the processes in INQuiry will be transformative for all involved, including faculty, staff, and students. Such change cannot happen in an instant, or by declaration; it requires a plan.

It is recommended that the implementation of INQuiry occur in stages, first with a subset of students and faculty drawn from the University community at large in a pilot program, followed by analysis of the results and a "go/no-go" decision by SMU to ramp-up to implementation for all students and faculty at the University. Those students who participate in the pilot program will receive academic credit for an appropriate portion of the existing graduation requirements. This credit should be *at least one-for-one* in terms of unit count with respect to existing graduation requirements to remove any unit-based barriers to participation. Those faculty and staff who participate in the pilot program will be dedicated to the effort, with release from other activities at a sufficient level to ensure the program's success. This process is expected to take several years, with decision points along the way.

As envisioned, INQuiry is a comprehensive set of activities that share many elements with existing programs across the University. For example, first-year students will engage in writing activities documenting their investigation, which can demonstrate their ability to analyze, explain, and persuade. They will also employ data analysis of quantitative information to further their understanding of real-world problems. Their studies will bridge across academic boundaries and will force them to consider solutions from multiple perspectives. All of these elements can be found in the Foundations portion of the current graduation requirements for all students. Thus, it is recommended that students who participate in the pilot program of INQuiry receive substantial credit towards general education requirements. Moreover, there needs to be enough flexibility in these unit requirements to allow those units to apply to critical components of their majors, to remove any barriers to any specific majors across campus.

Over the longer term, it is clear that the implementation of INQuiry will eventually change the general education requirements for all students so that it is incorporated into their programs. It is recommended that this process be undertaken with stakeholders—from those who steward the General Education Curriculum, from the entire faculty at-large, and from the wider SMU community of students, staff, and engaged partners—to ensure buy-in from all involved. In this process, it is important to see the INQuiry service not as a set of *additional* activities to complete, but rather a *reorganization* and *focusing* of those activities in which students are already engaged, perhaps taught in alternative ways. In fact, we believe efforts under INQuiry will enable a thematic structure to be placed on these general education requirements, tying them together, making them cohesive in scope, and increasing their impact.

Proposed Timeline

Year Zero [Development]

Faculty, staff, and graduate students will join with a group of "early adopter" students who will design and test the initial first year experiences, with appropriate resources (release time, access to technology, space) and a staff who will observe and document the processes as they are being created. Design of the curriculum will be initiated in the Summer and Fall Semesters with a rollout to a pilot group of thirty first-year students in the Spring Semester on an abbreviated, half-semester schedule. Student participation will be voluntary at this point, and faculty and staff participation will be carefully curated to catch any implementation issues that may arise. In parallel with this first-year effort, proposals for research pods covering two years of activities are solicited from faculty groups for awards and commencement of activities in Year One.

Year One [Inauguration]

A subset of the incoming student class—150 students or about 1/10th of the class—will apply in advance of the school year to participate in the first-year INQuiry course for both Fall and Spring Semesters, six academic hours each semester. Joint meetings of all students can be held in appropriate classroom space across the University. Simultaneously, a subset of "early adopter" students will participate in the upper-level junior/senior research pod activities, and also serve as mentors for the first-year students. No additional research pods are selected for this year. The focus of this year is on evaluation—what is working and what is not. At the end of Year One, university leaders and stakeholders will review the outcomes and make an important set of decisions on the path forward. One of these is clearly whether to scale up at this point, to continue at the existing size, or to modify or change the course forward. If the decision to scale up is made, planning is put into place to allow the commitment of resources and time to achieve the following.

Year Two [Scale Up]

Up to half of the incoming student class will be admitted after applying to the in the first-year INQuiry course, which now is held in McFarlin Auditorium for the first time. Mentors for these students are selected from the students who participated in Year One. A common Friday calendar is adopted so that all students can meet at the same time in McFarlin. Research pod proposals are again solicited for the following year. An evaluation process is put into place as part of the program to allow continuous improvement.

Subsequent Years [Roll Out]

Having established the implementation strategy and the training of mentors in past course offerings, the first-year INQuiry course is offered to all students. Research pod proposals are evaluated yearly.

7) INQuiry and the Twenty-First Century University

Like other teaching and research enterprises at SMU, INQuiry should be connected with similar programs at other institutions. Taking part in a network of institutions that have innovative programs bearing some resemblance to INQuiry will allow us to share best practices. More important, however, it will allow us to connect with faculty across the country—and, indeed, the world—not only to invite their participation on projects but to extend the size and scope of our work to tackle truly daunting problems worldwide.

INQuiry has the potential to transform SMU by seamlessly combining teaching and research in ways that will revolutionize both undergraduate and graduate education. From their first moments on campus, students learn the principles of self-motivated, hands-on, inquiry-based learning, and they will discover that research is not only for faculty; it forms an integral part of all well-educated adults' relationships to themselves, those around them, and the world. By becoming adept early in their lives with the fundamentals of creative and interactive technologies, students gain the literacy skills of the twenty-first century, and they absorb the best practices of learning how to confront difficult problems and to work with others to solve them. Faculty from every university discipline can propose large-scale problems that require these new technologies, and build teams of researchers consisting of other faculty, postdoctoral fellows, graduate students and undergraduates to confront and solve those problems.

INQuiry is a new mode of pedagogy, one that is likely to be widely emulated in its amalgamation of teaching and research, because it addresses head-on the changing nature of how we extract, manipulate, process, and disseminate information. Designed to harbor ongoing large-scale research projects, it will bring varied projects together, provide them a common platform for collaboration, disseminate results, and increase the possibilities for innovation, creativity, entrepreneurship, and technology transfer. Finally, INQuiry will help us further connect with the world outside the university as it allows us to connect with industry, nonprofits, state, religious, and cultural institutions in partnership to solve the daunting problems of the future.

APPENDICES

Appendix A: INQuiry's intellectual foundations & composition

Cross-fertilization among the Guildhall, Creative Computing, and Digital Humanities/Social Sciences will cross-fertilize, producing cutting-edge work in special domains that will become a specialization of SMU. For instance:

- Crowdsourced research has become a cutting edge in astronomy (Galaxy Zoo), paleolography (Digital Bentham), and archaeology (Sarah Parcak). ***Through collaborations between the Guildhall and Digital Humanities, SMU will become a designer of game-like interfaces for crowdsourced research and study*** that harness the public hivemind.
- Guildhall to date has focused on theater and entertainment. Historically, theater and entertainment have always been about engaging political and social realities and what an ethical relationship looks like. For instance, a recently celebrated game, *That Dragon, Cancer*, gives players the experience of parents watching a child die of cancer. **Society demands games that are designed by individuals who have reflectively engaged with the arts, humanities and social sciences.** Pairing Guildhall's teaching program with the arts, humanities and social sciences (esp the digital humanities) and working with their problems would provide an even richer grounding in those issues.
- Discourses of gaming (for instance Jane McGonigal, *Reality is Broken)* challenge how schools have traditionally taught individual responsibility at the cost of collaboration. **Reflecting on discourses from the social sciences and humanities can challenge students of code and game design to understand the relationships within which game, code, and other information-rich processes are produced.**
- Work between Creative Computation and Guildhall will create new opportunities for reinventing visualization and graphics. Work between Creative Computation and the digital humanities will create new opportunities for redesigning how scholars interact with information.
- What's the text/book of the future? It probably looks like a video game. A million high school classrooms around the nation need a more engaging way of teaching American History or Shakespeare; the synergy between actual humanists and top-of-the-line interaction designers can constantly innovate at just that edge.
- All three nodes require more interfaces with industry than they currently have. Their faculty are currently overstretched, but they are already abundantly connected to area industry. With more faculty hires, they could potentially scale up their research, bring in significantly more external funding, and respond to even more—and ever more complex—problems.

Appendix B: INQuiry's Philosophy of Teaching

The hallmark of the INQuiry network is a series of digital inquiry project experiences that mediate between and among the disciplines in order to illuminate the often overlooked aspects they share. **INQuiry will bring digital, interactive, interdisciplinary training to the university's general education curriculum, while resonating with its current structure and goals.**

A. **Fearlessly engage information and create ex nihilo.** Students engage data to develop insights and express a point of view supported by data. Data may include facts and statistics that are grouped together for analysis, as well as things that are used by inference or by assumption to create other things. Data may take various forms, such as the material an interactive artist uses to create her project or the ideas a philosopher deploys to construct his argument.

B. **Collaborate on intellectually diverse interdisciplinary teams.** Students learn to collaborate successfully on interdisciplinary teams from across SMU to address important questions and co-create meaningful artifacts. Each student gains perspective by co-creating with others from varying backgrounds and disciplines. In addition, they collectively learn to develop responsibility for negotiating meaning and an independent experience of innovation.

C. **Embrace the media of the interactive era.** Students embrace interactive technology and computational thinking as tools for communication and creative expression. They learn to use appropriate tools for collaboration and to communicate effectively with interactive technologies. They also gain a deep understanding of the positive and negative consequences of shifts in creative, interactive and participatory domains that are broadening over time.

D. **Contemplate the impact of innovations and historical disruption on society.** Students are likely to experience some sort of discontinuity in their lives so it is important for them to contemplate the intended and unintended consequences of a historical discontinuity.

There are many benefits of authentic, collaborative and contextualized learning through creative and interactive technology projects. The SMU Guildhall, Creative Computation, and Digital Humanities programs have experienced the power of digital inquiry experiences that allow students to personally interact with real data and create meaningful artifacts in collaborative, interdisciplinary teams. Students learn content deeply in the context of digital inquiry projects and develop responsibility for negotiating meaning collaboratively in their work.

Appendix C: Stories from the future

An INQuiry Professor

The Task Force imagines the changes that INQuiry will bring to the SMU campus.
Lakshmi is a professor of political science recruited to SMU for her work comparing democracy in India, Mexico, and the United States. When she arrives at SMU, she learns of Ellen, a digital historian working on text mining parliamentary debates in nineteenth-century Great Britain, collaborating with

Mark, a computer scientist specializing in natural language processing who was recently hired at INQuiry for his ability to collaborate across disciplinary boundaries. Lakshmi is impressed with their work, and wonders whether the tools used by the history team could be put to use modeling democratic debates around the world.

When Lakshmi collaborates with a historian and computer scientist, Democracy Lab is born. Each week, Lakshmi oversees a seminar-like lab meeting, while her students, who have been guided by computationalists at the library, present a digital analysis of her database on democracy. Each of the undergraduates and graduate students contributes a different facet to the project: some are cleaning up Indian and Spanish languages so that they can be rendered in translation by computer; others are doing sentiment analysis on the congressional debates of each nation to see how major political events are handled differently by each nation over time.

Democracy Lab is flourishing. The team's aggressive grant-writing, propelled by their time at the lab, has brought in NEH money for a conference on campus with in top linguistic programming scholars and historians and political scientists from around the world. Another member's connections to the city council mean that Democracy Lab is creating a visual, searchable, interactive interface for the minutes of the Dallas City Council going back to the nineteenth century, allowing members of the public to tune into ongoing debates and immediately get a history of current issues, leaders, and patterns of conflict.

The lab leaves commercial success in its wake. One of INQuiry's postdoctoral fellows, Joel, whom Lakshmi supervised in Democracy Lab, presented the group's work at a conference for corporate sponsors of INQuiry. Joel was approached by investors who want to sell his tool to other city councils. Joel has decided to step away from academic life for the moment to run a new company that will take the work of Democracy Lab across America.

An INQuiry Student

Chloe chose SMU because she had heard about INQuiry and how it was preparing first-year students like her to face any challenge. In her inaugural year at INQuiry, Chloe is enrolled in the *Common INQuiry* class. This year, the big question is drawn from the Grand Challenges. Chloe intends to major in Civil Engineering at Lyle, a field in which top employers regularly receive hundreds of applications, and she has heard that work at INQuiry will set her aside from other applicants in her field. In any case, work at INQuiry is now part of every undergraduate experience.

On Wednesdays, Chloe sits in McFarlin Auditorium with the rest of the freshman class. This year she will hear a series of lectures by luminaries of new research and its application, including Edward Tufte (the data visualization guru), Clayton Christensen (the Harvard Business School theorist of "disruption"); Amy Smith of MIT's D-Lab (for development technology); Jane McGonigle (the games researcher of Stanford); Dipesh Chakrabarty (the theorist of "the Anthropocene"), Liz Barry (the mapping expert behind the nonprofit Public Lab), and Franco Moretti (Stanford's originator of "distant reading" of 10,000 novels via computer). Each of these talks addresses some aspect of how technology is changing existing practices, disciplines, institutions, and economies around the world.

This week, philosopher Joshua Cohen of Stanford and Apple Universities is speaking about M-Maji, a mobile phone app to help people in the developing world locate clean sources of drinking water,

which Cohen believes is a tool that can promote democracy abroad. The students crowdsource their questions for Cohen via electronic app in the discussion that follows.

Later that afternoon, Chloe meets up with her small group in one of the conversation pods at her residence hall to discuss the ideas they've heard at the lecture. Her working group includes an intended sculpture major from Meadows, an intended Business major from Cox, and an intended political science major from Dedman. They meet to discuss their reading with their proctor, a masters student in environmental engineering, asking each week how knowledge is changing, what new data is being generated in the process of change, and what skills they would need to master in order to work with that data.

Each week this discussion of new skills blends seamlessly into a workshop of the students' own choosing out of the many workshops available at INQuiry. This week, they vote that the new skill they need is mapping. Their pod schedules a special workshop with Jessie Zarazaga, SMU's GIS instructor, and they begin to learn to collect data in a format appropriate for analysis on a map. Jessie and other librarians suggest that the students try adding historical data layers of drought in the past in order to gain a perspective on where drought is likely to strike in the future. Chloe's group will able to make claims, on the basis of their data analysis, about how irrigation might respond to climatic water crises in the future.

Meanwhile, other student groups will decide to invite a political science professor or a historian of the presidency to tell them more about Cohen's interpretation of the history of democracy. This process of scheduling their own "consultations" helps to acculturate freshman to a culture of self-directed learning at SMU. As with many colleges today, the abundance of on-demand resources mean that in order to profit from their college education, students must learn to request tutorials from the university—including GIS and data workshops available at INQuiry, but also including the library system, the writing center, and individual schools. At SMU, however, students are inculcated into this process of self-directed learning through their first year of proctor-directed consultations and workshops. In the years that follow at the university, students will the more easily schedule consultations with writing proctors, GIS tutors, data advisors and coding proctors. Their university education will have taught them to find the training they need to accomplish their aims.

Chloe's group meets again with their proctor later this week to adjust their training to their aims. Aside from lectures and discussion, their other responsibility to INQuiry freshman year is the design of a "blue sky" project that is now the hallmark of SMU's freshman year program. Each student group has chosen one from an array of "Grand Challenges" that originated with USAID's list of the same name; Chloe's group has decided to work on solving the conflict in Syria. On Chloe's team, the political science major has been learning that Syria's refugee problem stems from long-term conflict over land following the importation of drylands irrigation techniques during Syria's colonization by European powers in the nineteenth century. Chloe herself is interested in water management techniques, and she has been learning about rainwater harvesting and storage in desert landscapes. The sculpture major is interested in prototyping different cisterns forms, and this week Chloe is preparing to brief him on the best forms to prevent evaporation.

The group also meets weekly under the supervision of their proctor to brainstorm their interactive project, following up with each other one-on-one throughout the week as they push their project through a series of weekly challenges that inch towards a concrete plan: "dream," "orgchart," and "working prototype." At the end of the fall semester, they will present their work to other groups; at

the end of the year, all of the groups compete for the title of best use of technology, most likely to succeed, and most innovative project; the winners have access in their second year to advanced laboratory meetings normally reserved for juniors and seniors. Chloe's group wins "best use of technology," largely due to her collaboration with the sculpture major.

In her second year, Chloe begins to work with a civil engineering professor embedded in INQuiry whose research project parallels the interests of Chloe's group. This group too is composed of engineers working with humanists to understand the best solution to drylands irrigation. She joins weekly lab meetings, where she is directly under the supervision of a master's student. Every Friday, a historian of climate (visiting for the year from Harvard) and a political scientist (on the faculty at SMU) brief the group on some aspect of the history of catastrophes in drylands management, from historic droughts to abandoned canals to El Nino events to the devastating consequences of the borewell revolution in India; each week, the environmental engineer and his graduate students explain some aspect of their research on irrigation for drylands agriculture. Then the group begins to work; the graduate students are assigned tasks. A masters student in history is putting together a website on the political lessons of historic droughts, and Chloe is working on helping him to write up a series of case studies. She uses the GIS skills she learned in freshman year to map the historic droughts, although she ultimately chooses to visualize them in the digital humanities application Neatline, rather than GIS, in order to dramatize the relationship between political events and geographic change in the droughts.

In her third year, Chloe concentrates on completing the classes in her engineering major. Her work is focused and enlivened by her experiences of mapping and collaborating in her first two years at INQuiry. In her final year, Chloe decides to take the option for another collaborative working group.

Armed with most of the requirements for a civil engineering degree, Chloe returns to a project much like the one she tried on freshman year. She finds a history major specializing in the Modern Middle East, a sculpture major with expertise in 3d modeling software, and an Alternative Asset major from Cox. The Finance major from Cox has devised a publicly-traded share that will support businesses that create appropriate technology for the developing world, with the group's cistern as a prototype of a new entrepreneurial venture. They seem to be on the brink of recruiting the capital to finance a whole series of modern technologies appropriate to helping vulnerable populations in the developing world. This capital will be immediately put to use helping Chloe launch her drought-tracking company when she graduates. Ultimately, Chloe's company will provide non-profits, governments, and social-profit investors with cutting-edge news about where droughts are likely to occur next, allowing them to mobilize their capital to provide a safe pipeline of drinking water to vulnerable populations.

Jessie's Story

Jessie was born in east Texas and is attending SMU on a volleyball scholarship and hopes to get her bachelor's in business administration with a minor in political science. She is a first generation college student. At first when she was being recruited by SMU she was a little nervous about the school's commitment to enabling all students to use state-of-the-art digital tools to perform inquiry on big problems facing society.

Jessie had a computer at home, but had never really used it for anything beyond writing assignments and surfing the web. Becoming an expert in making it do her bidding seemed far-fetched and scary. Fortunately, her first semester when she piled into McFarlin Auditorium with every other first year student her eyes were opened to the possibilities. This really was very different than High School—no canned answers, and you never knew exactly what was just around the corner. Fortunately the faculty team teaching the class were inspiring and broke the approach down into basic parts she could readily understand.

Perhaps even more fun were her project sections held in the INQuiry. Her team consisted of 7 students with majors spread all across campus. They had a virtual dedicated design space that they could pull up in any of the project rooms across campus, even in their residence hall. In support of their efforts were the inquiry assistants which ranged from more advanced undergraduates, to graduate students, post-docs, and professionals from industry—all there to help them turn questions into information.

That semester she made a lasting friendship with Sarah when they found out they had something in common, both of them had an uncle who suffered with kidney failure and underwent regular dialysis. This bond led them to jump at one of the topics for their independent inquiry project: **Changing Public Health Policies to Optimize Both Patient Outcomes and Costs**. Too many people who need dialysis like Jessie's uncle don't have the health insurance to meet their needs. Instead they clog up county emergency rooms seeking treatment where they are often turned away as not an emergency case, only to be treated the next day when their situation has become dire. This costs associated with this procedure of treatment far outweigh the savings by not covering the patients in another more cost effective manner.

Analyzing 5 years of data from local county emergency rooms and hospitals will allow the SMU inquiry students to see if there might be a better way—a cheaper way that has better health outcomes.

Jessie is fortunate that SMU committed to enabling every single student to be ready to truly inquire; even the least prepared student can come to SMU and find, by the end of her freshman year, that she is prepared for self-directed learning, taking on larger and larger projects on herself, and marshalling the strengths of many collaborators to address a major problem for society.

The science of the future is a quantitative social science, solving tricky cultural and social problems with the power of data and interdisciplinary critical thinking. This is the sort of question that can only be answered with the best tools of the day, tools that help you wrap your mind around vast and ambiguous data sets and tear into them and make headway. At SMU, every freshman will be exposed to these skills within the framework of a project that speaks to their own unique talents and desires to make the world a better place. Every researcher will have the opportunity of joining an interdisciplinary research team to pursue new methods within their own area of study. To make this exciting work possible, a new space has been created in the university where minds can meet and experiment across disciplinary lines.

Appendix D: Library Workshop Examples

Library Workshop Curriculum Examples

Graduate specialists who are majoring in the field will teach workshops and host office hours to assist on projects. Advanced students will serve as tutors for INQuiry topics. Other expertise will also be available on call.

1. Organizing your Inquiry: Structuring your question, narrowing your topic, mind-mapping, documenting your research, managing sources and sharing within your team, ethical use of information.
2. Statistical Literacy: Evaluating statistical claims and knowing whether they are meaningful or reliable, understanding causation vs. correlation.
3. Media Literacy: Identifying bias in news coverage, identifying fake news and the tactics used to present facts in different contexts

Data Literacy Series

1. Finding Current Data and Statistics
2. Finding Historical Data
3. Data Basics: Learning about different forms and structures of data, collecting and cleaning data using toolkits such as Google Refine
4. Data Analysis: How to analyze and visualize datasets using, for instance, Tableau and R

Spatial Literacy Series

1. Intro to GIS
2. GIS tools: ArcGIS, ArcMap, Collector
3. Geo-Processing
4. Raster and Imagery Analysis

Undergraduate Publishing and Presenting Series

1. Presenting your research online with tools such as OMEKA, podcasting, and videocasting
2. Intensive on writing up research
3. Intensive on academic research, citation, presentation, and publication

Intro to Data Science

1. Intro to BASH and Python for Data Science: Scraping and Manipulating Data
2. Intermediate Python and Using Python Notebooks
3. Intermediate API use for scraping data
4. Advanced Machine Learning in Python, for instance Bayesian Analysis, Regressions and Topic Modeling
5. Databases, such as SQL
6. Visualization (Processing, d3.js, R, etc.)

INQubator Series (This series would be coordinated by the library but taught by campus experts.)

1. Virtual Reality/Augmented Reality Basics
2. 3D MakerSpace Technology Basics
3. Data Visualization
4. Super Computing Basics
5. Gaming and Gamification

Appendix E: External Partnerships

In addition to forging connections with other universities, SMU will use INQuiry to orchestrate ongoing **partnerships** with NGO's, museums, religious institutions, foundations, hospitals, organs of governance, industry, technology, and finance. This co-creative relationship with the world outside the university stands to distinguish SMU as a wellspring of innovation between academic ideas and external execution.

1. INQuiry's creativity should flow forth abundantly, nourishing all the institutions and endeavors in the DFW area.

- Interest in INQuiry should be cultivated directly from the leadership in all institutions in the regional area, depending on those institutions' areas of interest. If we are training artists and historians, we should have a relationship with museums; if training statisticians and economists, with city and state government and the Federal Reserve; if we train public health experts, then hospitals; if religious leadership, then nonprofits and churches; if we are incubating startups and training entrepreneurs, we should have a close working relationship with angel investors capable of taking the best projects every year and hatching them.
- INQuiry should be something that the entire DFW area sees as its own: a source of the region's best ideas, the entity that trains individuals in the skills of leadership, and the go-to unit for highest quality continuing ed. In addition, it should be seen as an exciting place that regularly brings to Dallas the brightest, most innovative minds in the country. This relationship will eliminate the delay that typically happens between academic ideas reaching an external audience, or between outside innovation attracting an academic critique.
- Partnerships such as these promise *to close the global R&D gap* which has opened as companies, governments, and nonprofits have diverted their investment away from innovation and entrepreneurship. The free market in itself is not equipped to close these gaps, which are better supplied by creating stable institutions that can profit from traditional research and reward innovation.

2. INQuiry will open **new avenues for external institutions to sponsor work conducted by regular SMU faculty** by in-kind work such as student mentorship; institutional publicity; leadership; or money. This will expand SMU's existing "engaged learning" programs on a large scale. Leaders of organizations outside the academy will be regularly invited to co-create new models for training, thus constantly renewing SMU's workshops for learning new tools.

- The major track for relationships within INQuiry and between INQuiry and external entities will be the position of an institutional "Sponsor," where sponsorship means that the institution claims a direct interest in promoting the ideas related to a particular track.

- INQuiry will accept "lab proposals" from hospitals, arts institutions, churches, schools, other nonprofits, government, industry, and other sectors.
    - For example, faculty sponsorships will be useful to particular organs such as the Guildhall that have already accepted industry proposals.
    - Under the right circumstances, Digital Humanities might provide services to the Texas State Legislature (textmining, visualizing, and making public the history of debates for example).
    - Perkins faculty who participate in a lab might invite a church or mission as a "sponsor" in that church leadership will be invited to critique the work of the lab or to judge the results of student work. Simmons faculty might invite charter schools or school boards as "sponsors" of their interdisciplinary lab work.

3. INQuiry will be responsible for developing **technologically advanced, interactive venues** for sharing all interdisciplinary research at SMU with the world through:

- Podcasts and other means of circulating INQuiry's solutions and discoveries will be available worldwide.
- Regular competitions among student groups at SMU and beyond will foster greater creativity and innovation.
- Information sharing with SMU alumni and donors.

Appendix F: Charge Questions and Brief Answers

1. Conceive of a name that captures Creative and Interactive Technology's ambition and collaborative nature. Choose a name that differentiates SMU and positions the University for national and global leadership.

INQuiry

2. Explain how the initiative will be interdisciplinary, or even trans-disciplinary. The initiative must cross many academic units at SMU; it may not be based in single College/School. The initiative must involve the administrative integration of existing programs as SMU such Creative Computation, Guildhall and perhaps others.

INQuiry is not a discipline. Rather, it synthesizes work done in The Guildhall, Creative Computation, and the Digital Humanities (and Social Sciences). Its work extends throughout the institutions, across schools, and encompassing undergraduate, graduate student, and faculty work. It will support team-based, project-based, trans-disciplinary INQuiry courses that satisfy a significant portion of the University Curriculum. INQuiry also houses faculty- and student-driven research in the service of internal and external quests for solutions to longstanding, complex problems.

3. What type of "entity" should INQuiry be? Should it be a center, institute or academic department, or some other type of entity?

INQuiry is not a center, school, or institute, but, rather, a hybrid entity as described in section 5.

4. What will be the governance structure of INQuiry? Who will lead it? Who will oversee it?

We recommend that it have a Director with the same authority and privileges of a Dean, somewhat like the Athletic Director. This will allow INQuiry to be part of the budgeting process, attract top-tier faculty and create new cross-disciplinary degrees as in the Guildhall and Creative Computation. The Director will report to the Provost and partner with the council of deans concerning academic offerings.

5. What are the research implications of INQuiry? How will it contribute to and advance research at SMU?

INQuiry will be transformative. Every undergraduate will have the opportunity to do original research in an inter-disciplinary team. INQuiry will be a place to provide the digital skills for ongoing SMU research. More significantly, it will provide a place for trans-disciplinary teams to collaborate easily. INQuiry will lower the barriers for faculty in widely different fields to team and create joint research projects.

6. What are the curricular implications of INQuiry? How will it inform undergraduate and graduate curricula at SMU?

INQuiry will provide comprehensive, trans-university, actionable information literacy for the twenty-first-century, designed to reach all SMU students. Curricular implications are outlined in Sections 1 and 6.

7. How do you anticipate that INQuiry will change the academic and intellectual culture of SMU?

INQuiry presupposes that multi-disciplinary innovative problem-solving involving creative and interactive computing is now a skill as fundamental as reading and writing. INQuiry will distinguish SMU from the herd by demonstrating that so much of SMU intellectual life is better when it is interdisciplinary, creative, and technologically enabled. This assumption follows because most of the interesting problems can no longer be solved by individuals or single knowledge silos; they depend upon collaborative knowledge-sharing and the generation of new fields. INQuiry provides an incubator for new degrees and programs as innovative as the Guildhall, Creative Computation Digital Humanities and Data Science, where new work can spin up in response to new combinations of fields in real-time.