Feedback on Data Science and Computing and Interdisciplinary Initiatives

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Purpose: This ad hoc committee met once on January 16, 2018 for about an hour. It was assembled to provide feedback on opportunities and challenges for data science and computing at SMU, with a secondary focus on ways to support interdisciplinary initiatives in general. The notes were compiled by Paul Krueger with input from the participants.

Data Science and Computing
Most of the discussion on this topic surrounded Data Science initiatives, although some of the interests and concerns impact computing broadly across campus as well.

The grass roots interest in building a Data Science program at SMU already exists and the discussion has already happened. SMU already has a number of unique programs, such as the GuildHall, Creative Computing, and many others in the computational and data sciences, but they are isolated and have not been leveraged to promote the University's position as the area's leading academic institution. What is required is something to bring it together, which is the key function of the Data Science Institute (DSI) proposed by the Task Force on Data Science and Analytics. The DSI is essential. It must have the resources and personnel to function properly and rally our Data Science efforts into a world-class initiative. Two **key considerations** were emphasized in the discussion:

1. **Proper funding and resources are imperative**. New faculty are required and they must be resourced properly. Current faculty involved in Data Science are already busy and they have no additional resources or time to build new programs. Additionally, new programs in this area at other institutions have received substantial seed funding ($30M and up, with some involving entire new buildings to support them). We must be able to compete with these if we want to have an impact. We must establish a **line in the sand** or **critical funding level** required for a new program in Data Science to be successful. Based on new Data Science initiatives at other institutions, this critical funding level is probably $25 – 30M in initial seed funding.
2. **Time is short**. We are at a **tipping point** where if we don't act soon, we will lose out. We already missed the opportunity to have the first undergraduate degree in Data Science in the state, and now we cannot even have the first in the city, as UTD has recently announced a major. If we don't act quickly, we will also miss out on the opportunity to compete for a top-ranked graduate program. In particular, we must be careful that other local universities such as UTA do not fill a void left by SMU (where SMU is currently leading locally) if we do not act.

Expanding on these key considerations, it was noted that if we keep doing what we're doing, we will not be able to elevate or strengthen Data Science across campus. Substantial additional resources are required. While it is anticipated that funds recovered from OE2C will be helpful, they are not large enough to significantly impact this initiative, judging by the amount of funding for Data Science initiatives given at peer and aspirant universities. OE2C funds would be better utilized to strengthen existing graduate programs through increased graduate student stipends and resources for faculty.

Significant new funds and innovative fund-raising approaches are required, such as:
- Tapping local resources and corporations interested in expanding Data Science capabilities:

- o Pursuing corporate sponsors to provide matching funds to a seed-funding donor
- o Providing incentives for corporate sponsors such as access to faculty and resources in a new Data Science center
- Recruiting development personnel to focus specifically on this initiative
- Utilizing funds from the MSDS program to help fund the DSI and associated programs.

Interdisciplinary Initiatives

As Data Science is inherently interdisciplinary, the committee discussed interdisciplinary programs and initiatives as they relate to Data Science specifically and university programs in general. A number of challenges were noted and important considerations raised:

- To build an interdisciplinary culture, more interdisciplinary hires are required, namely, people who are able to work across departments and programs.
- There are a number of barriers to interdisciplinary work and programs at SMU:
  - o Promotion and tenure and accreditation requirements present administrative challenges to doing penetrating interdisciplinary work. Can we revise our policies to reward people who work in multiple areas and properly evaluate their scholarly and creative impact for promotion and tenure review? Here it would be worth investigating policies and procedures at institutions that promote interdisciplinary work. d.school at Stanford (dschool.stanford.edu) and the Jacobs Institute for Design Innovation (jacobsinstitute.berkeley.edu) at U.C. Berkeley were mentioned as potential examples.
  - o The funding model at SMU can be adversarial. It can create barriers and disincentives for schools to work together on interdisciplinary programs.
  - o The tools we do have are not as effective as they could be. The Dedman College Interdisciplinary Institute (DCII) is a great tool for promoting interdisciplinary activities, but there is no follow up to the activities generated. This can be particularly challenging for cross-school endeavors because there is little incentive for the individual schools to support continuing an initiative they do not own (e.g., by providing course relief to instructors teaching newly proposed interdisciplinary courses).
  - o Oversight of interdisciplinary programs is problematic. There doesn't seem to be an established mechanism for doing this. Often such programs (at SMU and elsewhere) are housed in a specific department, but that makes them not interdisciplinary, by definition.
- The Faculty Senate, which supports general faculty and curricular matters in various capacities, does not have a specific committee or subcommittee tasked with consideration of interdisciplinary programs. It is worth considering to what degree the Faculty Senate can support such activities.

Primary Importance of Establishing a Separate Graduate School

A key observation of the discussion was that the creation of a separate **Graduate School** at SMU would directly address nearly all of the challenges to interdisciplinary initiatives presented above (especially with regard to promotion and tenure, oversight of programs, and the adversarial funding model), at least at the graduate level. Likewise, it would also directly benefit and support Data Science programs. Many on the committee felt creation of a graduate school was **the seminal issue** that ranks above even the Data Science and interdisciplinary initiatives. Indeed, it is an action supported by the Task Force on Scholarly Research and Creative Impact. Such a Graduate School with its own Dean and staff, properly structured to support and enhance the breadth of graduate programs at SMU, needs to be endowed at a very substantial level via possibly a School naming opportunity. This would allow the University's Ph.D.

programs to thrive after many years of stagnation and neglect. The Graduate School would also allow interdisciplinary programs to be created, at least at the masters and PhD levels. An endowed Graduate School would go a long way in establishing SMU as a first-class Research University, thereby helping Dallas become a go-to corporate relocation destination. Once the University's research strength is established via the endowed Graduate School, an endowed Data Science Institute and enhanced interdisciplinary programs **would easily follow with success**.