



THE UNIVERSITY  
*of* NORTH CAROLINA  
*at* CHAPEL HILL

# **Draft Feasibility Plan for the Launch and Implementation of a School of Data, Information and Society**

We propose to create a School of Data, Information and Society (SDIS) that will lead the world in using data and information to solve humanity's greatest challenges.

This School will bring together varied expertise, empower innovation at all scales, promote collaboration and synergy across disciplines and train the next generation of professionals and scholars in the fundamentals and applications of data science. Rather than a singular focus on this new discipline alone, we envision the SDIS will incentivize human-centric and pan-campus collaborations to grapple with humanity's most significant problems in North Carolina and beyond.

## 1. EXECUTIVE SUMMARY

Data and information impact every aspect of contemporary life—from the design of our communities to the growing and delivery of our food to our civic engagements. Collaborations around data can also transform intellectual work and address complex challenges across the state of North Carolina and beyond. Since its founding more than 226 years ago as the nation’s first public university, the University of North Carolina at Chapel Hill has constantly found itself at an intersection of institutional strengths and societal needs, and has consistently responded with scholarship and innovation that has established it among the nation’s leading research institutions.

Today, we face an extraordinary opportunity: to harness UNC-Chapel Hill’s unmatched pan-campus, multi-disciplinary strengths and leverage the power of data science to immediately position our institution among the very best in the world. Indeed, Carolina has a unique responsibility to our state, nation and the world to engage in data science scholarship, teaching and engagement to position the state of North Carolina as a national and global leader. Emerging and established market leaders are continuously evaluating geographic regions based on their ability to provide large numbers of skilled workers in data-related fields. These are game-changing opportunities with the power to transform economies and lives, and we want North Carolina to be a natural choice for such innovation. Hence, it is imperative that we support the needs of our region and society at large to work and thrive in a data-intensive world.

To this end, we propose to create a **School of Data, Information and Society (SDIS)** that will lead the world in using data and information to solve humanity’s greatest challenges. The SDIS can best address these complex social challenges by leveraging the full range of talent and resources already in place at UNC-Chapel Hill and serving as the core component in a larger ecosystem of data-related work on campus. We call this larger ecosystem Data Science @ Carolina. We propose that this new school will call upon our preeminent scholars in the social sciences, fine arts and humanities and health sciences across all departments, schools and centers as it leverages the structure and talent of our renowned School of Information and Library Science and the Departments of Computer Science and Statistics and Operations Research, and strongly engages the Departments of Mathematics and Biostatistics to develop an agile and interdisciplinary new organizational entity. This school will bring together varied expertise, empower innovation at all scales, promote collaboration and synergy across disciplines, and train the next generation of professionals and scholars in the fundamentals and applications of data science. Rather than a singular focus on this new discipline alone, we envision the SDIS will incentivize human-centric and pan-campus collaborations to grapple with humanity’s most significant problems in North Carolina and beyond.

This feasibility plan lays out a bold, broad and ambitious vision for data science education, research and community engagement. We will:

- Create a **School of Data, Information and Society** that promotes data-centric and data-driven research and education with emphasis on the societal impact of information and knowledge derived from data.
- Build on **Carolina’s current research strengths** in the foundations of data science and diverse disciplinary domains to accelerate data-enabled discovery and support innovation, economic development and the public good.
- Extend Carolina’s **leadership as a public institution** through research and community-engaged programs that emphasize and address societal impacts, equity and the ethics of data science.
- Develop and offer curricula, including **bachelor’s, certificates, master’s, professional science master’s and doctoral degree programs in data science** to prepare our students for data-driven careers and to become informed and responsible citizens.
- Implement **data literacy programs** that support undergraduate students at UNC-Chapel Hill as they move through the College of Arts & Sciences’ transformative undergraduate curriculum, IDEAs in Action.
- Develop “**Data for Public Good**” programs to increase engagement beyond the campus and support community priorities.

- Implement **clusters of data-driven research** around specific challenges designed to ensure collaboration among complementary fields of study and to solve pressing problems.
- Grow strategic partnerships with North Carolina communities, businesses, nonprofits and government to **translate discoveries into practical applications**.

This feasibility plan for the immediate launch and implementation of the SDIS has been developed by the steering committee for Data Science @ Carolina, appointed by the Provost, and with the collaboration of more than 100 faculty, staff and students representing many units from across the University. It is intended to provide a deliberate way forward to accomplish needed growth in data science while leveraging Carolina’s unique institutional characteristics within the higher education ecosystem of North Carolina.

## 2. THE NEED FOR ACTION

Data and the consequences of its interpretation and use shape our daily lives, making data literacy and data science education essential to research and scholarship across many academic disciplines, to learning at all levels, to translating theory to action, and to student career success. Students are increasingly demanding data science courses and programs. Companies like Google, Apple and Amazon and large numbers of smaller, less visible companies are expanding to geographic regions that can meet their enormous resource needs in data-related expertise such as information architecture, optimization methods and communication of data driven insights. UNC-Chapel Hill has an obligation to the state of North Carolina to ensure that all of our students are data literate regardless of their field of study, to prepare undergraduate majors and master’s students for careers in data-intensive professions, and to train our PhD students as intellectual thought leaders and transformative researchers in the foundations and applications of data science to solve complex domain-specific challenges. UNC-Chapel Hill aims to lead by shaping the emerging field of data science through an interdisciplinary and human-centric approach to the entire data life cycle.

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In North Carolina and beyond, industry, government, education, and daily life increasingly depend on employees and citizens who can collect the right data at the right time, manage and analyze these data, understand the laws that govern them, ethically interpret and use results to make decisions and understand our world, and document the actions and results for future explanation and reuse. Carolina’s faculty and researchers currently have many projects underway at various stages of this life cycle. Areas of data science strength at UNC-Chapel Hill include social and behavioral science, precision health, drug design and delivery, epigenomics, neuroscience, materials science, physical modeling, geospatial science, remote sensing, computational science, artificial intelligence, digital curation, data visualization and many more. Many transformative outcomes of the data revolution are underway in these areas; thus, considerable investment is warranted to capitalize on these strengths and emerge as a national and global leader in data science.

The steering committee for Data Science @ Carolina has conducted a comprehensive study of peer institutions, engaging with key leaders to learn from their development of data science programs over the past five years. Studies conducted in 2017 and 2019 by the Education Advisory Board found a robust demand for graduates from both undergraduate and graduate programs by employers in North Carolina and the region. The focus of the SDIS on education and workforce development will support rapid growth in the number of new jobs, career paths and opportunities for professionals who specialize in data related fields and ensure that North Carolinians are prepared to fill those positions in this transformative information economy. Our emphasis on the human and social dimensions of data science will differentiate our work and further support Carolina’s mission.

### 3. UNC-CHAPEL HILL SCHOOL OF DATA, INFORMATION AND SOCIETY

The National Research Council, in 2018, defined data science as “an interdisciplinary field that uses scientific methods, processes, algorithms, and systems to extract knowledge and insights from data.” It also includes applications of data methods in teaching, research and engagement. Our model embraces these foundational aspects of data science, and then extends them by considering the full data life cycle and emphasizing the ways that working with data brings together disciplines, promotes collaboration, and impacts humans and society. The SDIS strengthens these foundations and applications, includes the full data life cycle, is inherently interdisciplinary and collaborative, addresses the impacts of data on humans and society, and solves problems for the public good.

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*UNC-Chapel Hill envisions a world made healthy, safe and prosperous through data-informed decisions and actions.*

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#### 3.1. VISION

UNC-Chapel Hill envisions a world made healthy, safe and prosperous through data-informed decisions and actions. The SDIS will be the leading school devoted to data and information research, scholarship, service and creativity. We will lead by shaping the emerging field of data science with an interdisciplinary and human-centric approach to the entire data life cycle.

#### 3.2. MISSION

The mission of the UNC-Chapel Hill SDIS is to serve the state, the nation, and the world with premier data and information science educational programs and innovative research directed to advance the public good. The SDIS will educate a diverse community of undergraduate, graduate, and professional students who will become the next generation of data and information science leaders.

#### 3.3. GOALS AND OBJECTIVES FOR EDUCATION, RESEARCH AND COMMUNITY ENGAGEMENT

##### Overarching goals

- Promote, retain and catalyze Carolina’s strengths in the theory, foundations and applications of data science.
- Create and implement innovative and bold models of collaboration, learning and governance at UNC-Chapel Hill so that data science engages and supports a range of communities on and beyond the campus.
- Be inclusive, rigorous and inspiring so that our faculty, staff and students aspire to informed excellence and inspired leadership.

##### Objectives

- Provide educational programs that include a wide variety of disciplines on campus, provide opportunities for students to master data and information concepts and techniques, ensure a balance between rigorous core courses and preparation for applied work, and embrace collaboration and active learning experiences.
- Promote scholarship and research programs that drive innovation in foundations and theories, as well as translation and applications in the emerging field of data science, amplify UNC-Chapel Hill’s research strengths for innovation and impact in data science applications, build UNC-Chapel Hill’s national and global leadership in addressing the societal implications and ethics of data science and create infrastructure to accelerate progress towards these goals.
- Engage in service beyond the campus that transforms learning and external partnerships through experiential education and external collaborations, delivers programs and opportunities that bring communities together and serves state, local and national organizations, collaborates with other enterprises

to develop and operate open data warehouses and data brokerage services, and partners with local, state and national/international corporations in the service of the state and beyond.

#### 4. DATA SCIENCE EDUCATION AND CURRICULA

To address the student demand and market needs across North Carolina and beyond, the SDIS must offer a comprehensive array of courses, degrees and programs and help to ensure that all students are ‘data literate’ upon graduation. Competencies for all new programs must also align with existing degree and certificate programs.

**Undergraduate education:** We recommend three core areas of development: a data literacy requirement for all students, a data science major (with Bachelor of Science and Bachelor of Art options) and a data science minor. Competencies for these programs, while guided by the National Academies of Sciences, Engineering and Medicine 2018 report, *Data Science for Undergraduates: Opportunities and Options* will include an emphasis on ethics, legal and regulatory issues and social concerns.

**Graduate education:** We envision innovative graduate programs in data science, delivered through modular and non-traditional methods, including an emphasis on applying asynchronous pedagogical strategies to both residential and non-residential digital learning. We expect that such flexibility will empower more North Carolinians, including working professionals across the state and others nationally and internationally, to access these programs. We recommend the establishment of modular, stackable graduate certificate programs as well as three new graduate degrees in data science: (i) professional science master’s, (ii) master’s and (iii) doctoral.

**Professional education:** Carolina’s professional schools already leverage data in their education and scholarship. We envision the SDIS will, in collaboration with these schools, build certificate programs specifically to address the data science education needs of students in our professional schools. We also envision the development of cross-listed, collaboratively developed courses between the SDIS and other professional schools to serve specific needs for data literacy and advance the data science skills and training in these various domains.

#### 5. DATA SCIENCE RESEARCH

Research drives innovation, advances knowledge, challenges the status quo, inspires new enterprises, and solves complex problems. As a leading global, public, research university, UNC-Chapel Hill has established a variety of data science research activities across the campus.<sup>1</sup> We expect to accelerate research in data science foundations, translations and applications through research clusters that span disciplinary units and address crucial problems in health, environment and humanity. These research clusters are intended to capitalize on the diverse intellectual talent at Carolina to discover interdisciplinary solutions to the world’s most important problems.

We identify four goals for the research enterprise in the SDIS:

- Attract, retain and catalyze research strengths in the technical foundations of data science.

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<sup>1</sup>Additionally, Federal agencies including the National Science Foundation (NSF), National Institutes of Health (NIH), U.S. Department of Energy, the U. S. Food and Drug Administration, and the U.S. Department of Defense have decided to capitalize on the opportunities presented by advances in data science to drive discovery and solve complex problems in various disciplines. The NSF ([https://www.nsf.gov/news/special\\_reports/big\\_ideas/harnessing.jsp](https://www.nsf.gov/news/special_reports/big_ideas/harnessing.jsp)) and NIH (<https://datascience.nih.gov/strategicplan>) are each creating strategic plans specific to data science. UNC-Chapel Hill is already playing a crucial role by leading several funded projects in some of these prestigious programs. By creating a school with a pan-campus data science focus, Carolina will be well poised to leverage the above opportunities on a larger scale to advance basic, translational, and applied science by building open, science-focused, multi-disciplinary teams to solve problems in various disciplines, including the humanities and the social sciences.

- Amplify UNC-Chapel Hill’s research strengths for innovation and impact in the applications of data science.
- Build UNC-Chapel Hill’s expertise and leadership in research on societal impacts, equity, regulatory and ethics of data science.
- Create infrastructure for the acceleration of data science through investments in new faculty, staff, opportunities for student engagement and training in data science across all areas of the University.

## 6. DATA SCIENCE COMMUNITY ENGAGEMENT

Through conversations with NC community leaders and UNC-Chapel Hill organizations, the Data Science @ Carolina steering committee identified key data needs among community organizations and government agencies. With the increase in devices that collect data (e.g. traffic sensors) in our NC communities, many agencies have an abundance of data with limited time and skills to analyze or mine for information or to address corresponding needs in law, ethics and social impacts. These situations offer meaningful research and community engagement opportunities

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*We recommend developing a new “Data for Public Good” program to connect UNC-Chapel Hill resources to serve and work with community and local governmental organizations.*

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across North Carolina for UNC-Chapel Hill’s faculty and students at all levels. Such engagement must be organized and managed to benefit both the school and communities. We recommend: (i) developing capstone courses for undergraduate and master’s students emphasizing work with community partners, (ii) leveraging research funding specific to major community or governmental priorities for bringing together students, researchers and organizations/agencies to solve critical problems, (iii) developing a new “Data for Public Good” program to connect UNC-Chapel Hill resources to serve and work with

community and local governmental organizations, thus further supporting Carolina’s mission of “for the public good,” and (iv) leveraging our innovative research cluster model (see section 5) to promote open science and the public good.

## 7. WHAT DIFFERENTIATES THE UNC-CHAPEL HILL SCHOOL OF DATA, INFORMATION AND SOCIETY

Many universities have launched data science institutes, programs or schools. In conducting this feasibility study, we visited the University of Virginia, hosted the data science co-lead from University of California at Berkeley, interviewed leaders from Massachusetts Institute of Technology and talked to faculty and leaders from North Carolina State University, University of North Carolina at Charlotte, University of Michigan, University of Wisconsin and University of Washington. We studied published announcements from Boston University and Georgia Tech, and the 2018 Moore-Sloan Foundation’s report on the status of data science in 20 U.S. universities. We met with corporate leaders from SAS, IBM, Facebook, Amazon and Credit Suisse, to name a few. Approaches to data science have varied across investment strategy (e.g., campus and private funding), curricular emphasis (e.g., mix of engineering, information/computer sciences, business, math/statistics) and organization (e.g., institute, school, department/division). Building on the foundational and research strengths of data science in place on campus, we propose a School of Data, Information and Society that is distinctive and unique on two key dimensions.

***Pan-campus and for the public good:*** Based on our institutional values and our perspective on the emerging field of data science, Carolina will develop a school that is fundamentally human-centric and aims to advance the public good. To do so, the SDIS will be highly interdisciplinary, leveraging our strengths in arts and humanities, social sciences, STEM sciences and health sciences, as well as law, business and other professional fields. This human-centric and pan-campus approach is a critical differentiator because we believe the most important discoveries will be derived from partnerships that only a campus as large and diverse as ours can produce. This approach will ensure that our students not only develop strong foundations in technical areas, but are also well-grounded in the ethical, legal, regulatory and social consequences of digital work and life.

***Porous, flexible to empower collaboration & interdisciplinarity:*** We imagine a school that challenges fixed borders and siloed approaches to research and learning. We capture this aim with the concept of porosity, which translates into a deliberate structural design that enables, empowers, and encourages collaborations, disciplinary cross-pollination, and intellectual renewal.

Rather than a traditional departmental structure, SDIS will be organized around flexible research clusters and suites of degree programs. Research clusters will draw faculty from disparate units across the campus. These clusters will emphasize pressing problems, foster interdisciplinarity, and work to advance the public good.

The research clusters will be flexible and evolve over time. Clusters will be formed and dissolved as faculty perceive new opportunities. Some clusters may be renewed. Others will be recast. New clusters may be driven by expertise and evolving public needs. Here, porosity will drive the constitution of clusters, e.g. experts in business decisions, gender equity, remote sensing, etc. may join a cluster, bringing expertise into the SDIS while contributing new insights to their own disciplines and departments. Degree programs will be organized around, and in collaboration with existing and new bachelor's and graduate degrees with strong cohorts of tenure-track and teaching faculty. Degree program coordinators for existing and new programs will interact regularly to maximize shared school and campus resources, find common grounds, adapt curricula over time, and support the scholarship of teaching. The degree programs and research clusters will share a core infrastructure<sup>2</sup> with strong linkages to the campus libraries, centers and institutes.

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We believe strongly that these distinctions will help UNC-Chapel Hill lead the state and the world in data science research, education and engagement.

## 8. STRUCTURE AND GOVERNANCE OF THE SCHOOL OF DATA, INFORMATION AND SOCIETY

What gives data science its unique identity is that it draws on individual skills and concepts from a wide spectrum of disciplines that may not always overlap with one another—a truly multidisciplinary field. The National Academies of Sciences, Engineering and Medicine 2018 report, *Data Science for Undergraduates: Opportunities and Options*, suggests that a new field of data science is emerging out of several established fields, including information technology, computer science, statistics, mathematics, information science, operations management and business analytics. However, core data science education and training are still evolving, because data science is not reducible to any preexisting field.

Hence, we propose to build a SDIS that promotes cross-disciplinary collaboration and advances the good of our state and broader society. We propose a school with porous boundaries that foster integral partnerships with people, programs, and resources in our nationally and internationally acclaimed departments and schools across the campus.

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<sup>2</sup> This infrastructure will include: (i) **Data Commons** – a campus-wide concierge service for data available via grants, purchases, and open access for all research and teaching needs; (ii) **Data Science Core** – availability of help with data analysis techniques for investigators and their research project needs; (iii) **Data Problem Solving and Consultation Center** – a physical hub with human talent to triage and support data needs from individuals and teams across the campus; (iv) **Community Engagement Programs** – specific instructional experiences for students and research cluster connections to translate work toward the public.

## 8.1. CONCEPTUAL VISION

This innovative organization will be driven by a new data science ecosystem. Figure 1 illustrates **Carolina's data science perspective** with the interacting layers showing the complexity and depth of data science research, education and outreach functions in the school. To be effective, our data science efforts must be both focused and broad at the same time which is illustrated by the many layers in Figure 1. The innermost layer indicates the main application foci where we believe UNC-Chapel Hill has the greatest potential for public impact and research differentiation in data science, at least initially: health, humanity and the environment. Explorations in each focus area will span the foundational, translational and application realms. Depicted next is the human-centric perspective inherent in our mission: the broader societal, regulatory, legal and ethical considerations in everything we do. This layer illustrates Carolina's emphasis in elevating the important role of humanistic disciplines in the evolution of data science. The next layer outlines the entire data life cycle, illustrating that curricula and research outcomes will be comprehensive and complete. The outermost layer represents the ways that the entire data science enterprise at Carolina, both within and outside of the SDIS, will accelerate learning and positive change in the human condition.

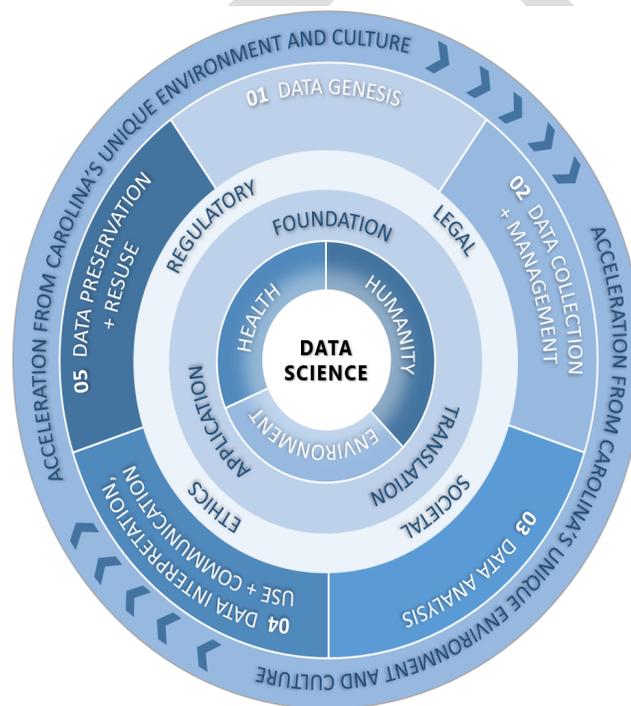


Figure 1. Carolina's Data Science Conceptual Vision

## 8.2. STRUCTURE

To create the SDIS, we propose to build upon those organizations at Carolina which possess current strengths in the foundational areas of data science and integrate professors, staff, courses, and projects from across the campus to realize our collaborative and human-centric vision. SDIS will call upon our preeminent scholars in the social sciences, fine arts and humanities, and health sciences as it leverages the structure and talent of our renowned School of Information and Library Science and the Departments of Computer Science and Statistics and Operations Research, and strongly engages the Departments of Mathematics and Biostatistics to develop an agile and interdisciplinary new organizational entity. We will especially build strong ties to UNC-Chapel Hill Libraries that are actively engaged in data education, data literacy, open data initiatives, sustainable scholarship and information, data, and knowledge repositories. Likewise, we will partner with our many successful research centers and institutes, including the Renaissance Computing Institute, the Odum Institute for Research in Social Science, Carolina Population Center, the UNC Lineberger Comprehensive Cancer Center, and others, as well as our engagement and outreach centers like

Carolina Public Humanities, and the Parr Center for Ethics, to name a few. As a starting point, we will bring together the intellectual talent, interdisciplinary culture, and strong operational base of the School of Information and Library Science with the talent and resources of the Departments of Computer Science and Statistics and Operations Research and dual appointment partnerships with our nationally and internationally acclaimed centers, departments and schools across the campus to launch the SDIS.

We envision a bold school which has porous borders to enable, encourage and incentivize faculty toward short and long-term collaborations in data science research, teaching and engagement. We envision the following goals for the structure of SDIS:

- Establish strong, yet flexible programmatic collaborations with various departments in the College of Arts & Sciences and schools across campus.
- Sustain and bolster existing vibrant degree programs in information and library sciences, computer science, statistics and operations research that will serve as inaugural partners for the new data science degree programs.
- Forge research collaborations around compelling data science research opportunities through the creation of problem-solving clusters that are well resourced to incentivize such interdisciplinary collaborations.
- Employ a range of joint faculty appointments that mutually benefit faculty and their respective units.
- Attract talented professional staff who serve the needs of students, faculty and the entire campus.
- Facilitate a “data commons” that brings people, datasets, technology and tools together for collaboration to deliver instruction, conduct research and engage community partners.
- Operate with a flexible and innovative structure and governance model that adapts to a highly dynamic field.
- Attract top new talent prepared to work with excellent and diverse colleagues and students in a dynamic organizational setting.
- Provide undergraduate and graduate students with cutting-edge training in data science that positions them to become productive contributors to the North Carolina workforce.

The popularity of data science courses and programs will affect academic infrastructure in several ways—notably, in terms of who will “own” the program and how it will be delivered. We envision the new SDIS as the “facilitator” of what will be a truly interdisciplinary set of academic programs in data science and research centers of innovation that will advance the field of data science and use it to address major societal challenges. This inclusive approach toward data science education and research is crucial, particularly given the interdisciplinary nature of the overall field.

We propose to develop collaborations in both research and education across units on campus while maintaining intimate programmatic ties among the School of Information Library Science, Department of Computer Science, Department of Statistics and Operations Research, Department of Mathematics and Department of Biostatistics<sup>3</sup>. As the field of data science evolves, this structure, along with the flexible governance model described below, will help us maintain the ability to leverage many other disciplines in the development of courses, materials and faculty for the best outcomes for our students.

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<sup>3</sup> Our own study of how our peers are developing their data science programs and schools showed no one path was preferred. While most universities are leveraging their existing computer science, statistics, information science and mathematics departments, as we also intend to do, there are various models for bringing these units together to create and evolve this new discipline of data science. We acknowledge that these existing STEM programs will continue to grow and attract students while data science evolves through collaborations with these STEM programs and programs from the social sciences, arts, humanities, and health fields at UNC-Chapel Hill.

### 8.3. GOVERNANCE

If we are to realize our vision of an interdisciplinary and human-centric approach to data science, we will need a governance structure that actively engages the intellectual talents and resources across the campus while keeping the SDIS and associated programs agile.

Our governance model envisions a leader who attends to cross-unit collaborations (breadth) as well as focused school operations (depth). The Dean of SDIS will also hold the title of Executive Vice Provost to indicate the unique responsibility of this position to work across campus to ensure that the resources of the SDIS are used to the greatest benefit of UNC-Chapel Hill. This position is not designed to control, “all things data science” at Carolina. The

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*The Executive Vice Provost and Dean of SDIS will work with a pan-campus executive committee to set administrative, curricular, research and development policies, processes and priorities.*

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Executive Vice Provost and Dean of SDIS will work with a pan-campus executive committee to set administrative, curricular, research, and development policies, processes and priorities. This unique governance structure represents our core philosophy of data science as a team endeavor and will support our vision of a school that is truly collaborative in teaching,

research and engagement. This model is built to utilize the inherent collaborative nature of Carolina’s culture. The unique leadership title – Executive Vice Provost and Dean of SDIS – was chosen specifically to enable and charge this leader to work broadly to leverage our strengths and accelerate innovations in data-related areas across campus.

The SDIS executive committee will be composed of a set of deans and faculty from other UNC-Chapel Hill schools. We envision 8-10 members for the executive committee appointed for multiyear terms (e.g., 2-3 years). In the implementation plan, a strategy will be defined for degree program coordinators and research cluster faculty leads to work with the Executive Vice Provost and Dean designees to support the organization of teaching, promotion and tenure processes, and related functions.

To further realize our vision of cross-campus collaboration, we will employ a variety of shared faculty appointments with varying durations. Faculty for academic programs will be 75% or 100% in SDIS while the faculty for the research clusters could be from any participating unit on campus and have zero to 100% financial affiliation with SDIS. We envision this school to grow to more than 100 full-time faculty through new hires and joint appointments. The SDIS will organize research programs and faculty clusters around key interdisciplinary research opportunities rather than traditional departments, providing flexibility for faculty to reorganize and realign as research opportunities and educational needs evolve. The SDIS will organize educational programs around degree offerings in data science, information and library science, computer science, statistics, operations research and health informatics with delineated hiring, mentoring, and promotion and tenure procedures. These programs will be governed by a leadership committee with equal representation from these educational programs.

We will also create a strategic advisory board that will play a key role in charting the direction of the school. The board will be made up of leaders from academic peers, industry experts, and heads of non-governmental organizations to advise the Executive Vice Provost and Dean and the executive committee on data science needs and developments in the field and the marketplace. This board will also play a key role in the identification, development and review of problem-solving research clusters. These research clusters will consist of faculty, post-doctoral associates, graduate students, master’s students and undergraduates and will be in SDIS and/or in participating units across campus. These unique combinations will enact our pan-campus approach to bring together the right expertise to address pressing problems.

This governance model is driven by our philosophy of data science as a team sport and meant to create a virtuous cycle that accelerates research, education and engagement. It aims to ensure organizational agility, interdisciplinary collaborations and the realization of our pan-campus vision for innovation in all things data.

## 9. FEASIBILITY

Based on the efforts of the various subcommittees, our discussions, and investigations, we are convinced that there is the expertise and talent in place at UNC-Chapel Hill to build a world class program, the capability to adapt capacity and infrastructure to the growth envisioned, and a financial pathway that leverages the full range of potential revenue streams. Thus, this committee unanimously recommends, after many months of detailed review, that it is feasible to create a School of Data, Information and Society which will amplify and transform the data science research and education currently underway at UNC-Chapel Hill. We foresee that an increase in undergraduate enrollment will be a component of the financial model for the SDIS.

## 10. BUDGET

It is critical to ensure that this recommendation is grounded in an implementable and sustainable financial plan. This plan leverages existing faculty and staff resources. However, these faculty and staff are already fully committed to existing research and education and thus new resources are essential to support the new programs in SDIS. A large investment will be required to support a new school (i.e., additional faculty, staff, classrooms, and labs), new research collaboration models, new curricula for undergraduate and graduate students, and additional administrative support for new students, faculty and staff. We must also plan for additional faculty and staff in the College of Arts & Sciences to support the additional students on campus and for additional services and facilities such as dining, housing, parking, advising and more. Ultimately, this committee is recommending that implementation planning proceed with the following assumptions:

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*It is critical to ensure that this recommendation is grounded in an implementable and sustainable financial plan.*

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- An implementation plan will need to refine the financial needs for both the new school and physical facilities, student services and additional College of Arts & Sciences faculty needed for increasing undergraduate enrollment.
- The school would target adding 30 full-time faculty initially with growth to more than 100 full-time faculty at scale.
- Seed funding would be made available for collaborative research clusters focused on solving complex real-world problems.
- The implementation plan will need to locate additional space for classes, personnel and collaborations when funding is made available.
- Tuition from the additional undergraduate students will be, in part, a resource for the new school.
- SDIS is expected to generate additional funding through graduate certificates and professional science master's programs offered both on campus and for digital non-residential learners.
- The implementation plan will need to include strategies for securing funding from the state, corporate partners and private donors.

The financial model required relies on funding from all sources: tuition receipts, state appropriations, development campaigns, research grants and corporate partnerships for the school to succeed as envisioned. The immediate need is obtaining funds to begin recruitment of leadership, staff, and faculty for the SDIS. Help from the state of North Carolina will be imperative to provide the immediate and ongoing funds to build out the plan for the SDIS.

## 11. CONCLUSION

North Carolina is the ninth most populous state in the United States. It is increasingly a magnet for companies requiring skills from emerging disciplines, and it is the responsibility of UNC-Chapel Hill to provide opportunities for students to gain these skills. We believe that the University is well-positioned to achieve its vision and take its place on the national competitive data science stage. In our current moment, citizens, communities, and employers all stand to benefit from a plan that brings together expertise, advanced training and research linked with data science. This plan must be interdisciplinary, human-centric and implemented through collaborative governance structures that drive innovation and promote public good. The steering committee presents this plan to the Provost for consideration to bring to the Chancellor and Board of Trustees for comment and approval. We believe implementing this plan will accelerate the emergence of Carolina as an international leader in data science and serve the students, people, and industries of North Carolina and beyond.

We recommend that an implementation and planning committee consisting of faculty, staff, and administrators be commissioned with the charge to propose, by October 2020, a detailed 5-yr plan for implementation of the SDIS. We anticipate working concurrently with implementation planners regarding the launch of a professional science master's program at the graduate level and a certificate and/or minor in data science at the undergraduate level. We recommend this implementation plan be presented to the faculty and leadership of UNC-Chapel Hill for a launch of the SDIS in 2021.

## DATA SCIENCE @ CAROLINA STEERING COMMITTEE MEMBERS:

**Gary Marchionini**, Dean, School of Information & Library Science (Chair)  
**Jay Aikat**, Computer Science & Chief Operating Officer, RENCi (Co-Chair)  
**Daniel Anderson**, Professor, English and Comparative Literature; Director, Digital Innovation Lab  
**Suzanne Barbour**, Dean, The Graduate School  
**Todd BenDor**, City and Regional Planning; Director, Odum Institute for Research in Social Science  
**Bob Blouin**, Executive Vice Chancellor and Provost  
**Debbi Clarke**, Associate Provost for Strategy and Special Projects  
**Chris Clemens**, Physics and Astronomy, Senior Associate Dean for Research and Innovation, College of Arts and Sciences  
**Joel Curran**, Vice Chancellor for Communications  
**Andy Johns**, Senior Associate Vice Chancellor for Research  
**Nate Knuffman**, Senior Associate Vice Chancellor for Finance and Operations  
**Terry Magnuson**, Vice Chancellor for Research  
**Peter Mucha**, Professor, Mathematics and Applied Physical Sciences  
**Alex Tropsha**, Professor and Associate Dean for Data and Data Science, Eshelman School of Pharmacy  
**Elaine Westbrook**, Vice Provost for University Libraries and University Librarian  
**Susan Kellogg**, Consultant, Office of the Provost

### Chairs of Sub-committees:

*Undergraduate Curriculum* - **Rudi Colloredo-Mansfeld**, Senior Associate Dean for Social Science and Global Programs  
*Graduate Curriculum* - **Timothy Elston**, Jeffrey Houtp Distinguished Investigator, Professor of Pharmacology and Co-Director, Computational Medicine Program  
*Research* - **Michael R. Kosorok**, W. R. Kenan, Jr. Distinguished Professor and Chair of Biostatistics and Professor of Statistics and Operations Research  
*Physical Infrastructure* - **Scott Savage**, Executive Vice Dean/Chief Operating Officer and Associate Professor of Clinical Education  
*Finance and Funding* - **Jana Raedy**, Associate Professor of Accounting, Ernst & Young Scholar in Accounting and Associate Dean of the Master of Accounting Program  
*Student Services and Staff Support* - **Steve Farmer**, Vice Provost for Enrollment and Undergraduate Admissions  
*Community Engagement* - **Ryan Thornburg**, Associate Professor, Hussman School of Journalism and Media