School of Computer and Data Sciences Strategic Plan

January 2023

Complied by Judy Kanavle, Gretchen Drew, Hal Sadofsky, and Bill Cresko

Contents

Background and Purpose

The School of Computer and Data Sciences (SCDS) strategic planning committee (henceforth "the committee") was a multi-stakeholder advisory committee (see Appendix 1) charged in spring 2022 by Provost Patrick Phillips and College of Arts and Science (CAS) Dean Bruce Blonigen. The committee was convened by Bill Cresko, Executive Director of the Presidential Initiative in Data Science (DSI), and Hal Sadofsky, CAS Divisional Dean of Natural Sciences.

The committee's purpose was the following:

1. Develop an initial strategic plan for a potential School of Computer and Data Sciences.
2. Submit a recommendation, informed by the elements of the strategic plan, to university leadership to move forward or not with a new School of Computer and Data Sciences.
3. Complete development of the strategic plan if university leadership decides to move forward with a school.

On April 14, 2022, co-chairs Bill Cresko and Hal Sadofsky began working with Judy Kanavle and Gretchen Drew on the development of broad vision for a School of Computer and Data Sciences (see Appendix 2). That preliminary vision served as a launching point for the full committee's process which began in the summer of 2022 and extended through the end of fall 2022.

In early October 2022, after the creation of an ambitious vision, mission, goals, and principles, informed by stakeholder input and facilitated discussions, the committee voted unanimously to recommend that the university move forward with the creation of a School of Computer and Data Sciences aligned to achieve vision, mission, goals, and principles developed by the committee. University leadership, including Acting Provost Janet Woodruff-Borden and Dean of the College of Arts and Science, Chris Poulsen, approved the recommendation.

Following the approval by leadership, the committee continued their work developing a set of strategies and two-year objectives. This report represents the culmination of the committee's work, including the final SCDS Phase 1 - Strategic Plan (below), as well as links to the full set of goals, strategies, and meeting materials (see Appendices 3-6).

The strategic plan presented in this report is intended to advise the next phase of work – an implementation effort that will be led by the College of Arts and Sciences. The committee hopes that the ambitious vision, mission, goals, strategies, and objectives developed by the committee play a strong role in shaping the future school.

Vision

The School of Computer and Data Sciences (SCDS) will be known as an innovative hub for advancing education and research, promoting collaborations, and building connections across disciplines, the university, and the world. The school's reputation will attract a diverse intellectual community of students and scholars working collaboratively with one another and societal partners to benefit the world. Students will become interdisciplinary problem solvers, innovators, and entrepreneurs. Research will advance the fields of computer and data science while being ethically guided, technologically nimble, and informed by societal needs.

Mission

Empower a diverse population of students and faculty working to advance knowledge in computer and data science, train the next generation of scholars, and engage with the wider world to tackle interdisciplinary challenges.

Principles

The SCDS Strategic Planning Committee, administrators, faculty, and staff will follow a set of guiding principles as we develop, implement, and carry out the work of the SCDS. These principles are co-equal and collectively guide all our activities.

Our research and education will engage with the needs of the world.	We prioritize diversity, equity, and inclusion in all activities.
We promote numeracy and data literacy as keystones of education.	Our programs will lead the evolution of changing technology.
We empower students to lead productive and meaningful lives.	We prioritize innovation, problem solving, and entrepreneurship.
We build on our liberal arts foundation.	Computer and data science will be open to everyone.
We center ethical impacts in all areas of our work.	We promote and maintain collaborations with academic and societal partners.

Goals

Foundations

A1. Create a respected school that has individual strengths in computer and data science but also a deep culture of transdisciplinarity that is fostered through broad connections with domains across campus and the wider world.

A.2 Attract and retain outstanding faculty from diverse backgrounds who flourish at UO, are role models for students, and provide wide leadership in computer and data science.

A.3 Create a physical environment that supports the educational, research and engagement missions of the school through educational and support spaces to enhance student experiential learning and career success, co-location of researchers to facilitate collaboration, and space to engage with other universities and societal partners.

A.4 Create a sustainable financial model that allows the school to thrive by being dynamically responsive to a rapidly changing world.

Educational Innovation

B.1 Create robust and inclusive undergraduate and graduate educational programs that promote multi-disciplinary collaboration, remove barriers to entry and achievement, center the ethical and societal impacts of data science and computational innovations, and are inviting to all students at the University of Oregon.

B.2 Develop broadly available classes to create more numerate and data-literate students across the university by teaching all UO students to think critically about quantitative and computational matters.

B.3 Provide resources and infrastructure for computer and data science pedagogy, and support for connecting students to careers through experiential learning opportunities.

Research Empowerment and Engagement

C.1 Create a research and innovation hub that promotes discipline specific and interdisciplinary research and grant opportunities, provides the technological infrastructure to support data and computer science research, facilitates research on ethical uses of computer science and data science, and adds to knowledge and expertise in data science pedagogy.

C.2 Make the University of Oregon a research center for the advancement and incorporation of inclusive computer and data science pedagogy that includes the effective delivery of computer science education at K-12, undergraduate, and graduate levels, the impacts of computer and data science on society, and the short- and long-term effects of human-machine interactions on individuals and communities.

C.3 Build deep research and academic relationships with key government, industry, and other societal partners that fosters innovation and entrepreneurialism, builds the Oregon workforce through experiential student learning, catalyzes new research, launches companies and helps computer and data scientists create positive impacts on society.

SCDS Strategies, Objectives, Timeline and Measures of Success:

S1) Create a unique identity that differentiates us from our peers by:

- building upon UO's history as a liberal arts research university
- leveraging our growing strengths in areas such as the environment, sports and wellness, and education
- focusing on inclusiveness and tailoring training to domains
- using industry partnerships to open doors for our students and increase research impact

Two Year Objectives:	Timeline:	Measures of Success:
1) Develop an identity statement that differentiates UO SCDS from other programs.	Winter 2023 to Spring 2023	One paragraph, developed in consultation with stakeholders, approved by leadership
2) Implement branding & advertising strategy, including websites, brochures, etc.	Winter 2023 to Fall 2023	Completed drafts of material Materials approved by leadership/stakeholders
3) Integrate SCDS identity/advertising into relevant university web pages/branding	Winter 2023 to Fall 2023	Integrated set of webpages, etc., with references to SCDS identity that is clear and unique
4) Hire faculty who advance our mission and vision and who will help us shape our unique identity	Fall 2023 to Fall 2024	Faculty hired with job postings guided by vision, mission and description of the unique identity we are creating

S2) Tell our story to inspire philanthropy by highlighting our school's unique identity, including:

- our open doors to diverse students and faculty from all backgrounds
- external focus on societal problems
- synergy with other UO initiatives and strengths
- and focus on increasing positive impact

Two Year Objectives:	Timeline:	Measures of Success:
1) Develop a philanthropy strategic workplan that details opportunities for small, medium, and large gifts	Winter 2023 to Summer 2023	Philanthropy strategic workplan is developed and is used to guide development of opportunities and asks.
2) Survey donors on social/technology/economic impact for SCDS that they care about	Winter 2023 to Fall 2023	Survey prepared, tuned, conducted, and completed
3) Hold external donor meetings to introduce and build relationships	Fall 2023 and on-going	Relationships formed and philanthropy generated
4) Partner with communications to promote identify of SCDS to donor community – target impact.	Fall 2023 and on-going	Awareness of the school and impact driving philanthropy; use prospecting tool to identify donors

S3) Create an inclusive and supportive home for students from all backgrounds where:

- data scientists can choose from a wide range of domains
- degree pathways meet students where they are
- cross-disciplinary offerings allow students across UO to become data literate and computationally competent
- computer science is viewed as a liberal art
- admissions policy is a welcome sign rather than a gate
- affordability is a positive component

Two Year Objectives:	Timeline:	Measures of Success:
1) Designate or hire a coordinator to help support affinity groups that can enhance community for students of varied backgrounds	Fall 2023 to Summer 2024	A staff member exists whose responsibilities center on student support
2) Organize community-building activities among all students to facilitate closer connections and support among student peers with different backgrounds	Fall 2023 to Summer 2024	Concrete term-by-term activity schedule and budget created and being implemented by coordinator
3) Create dual track sequences (for students who need more math vs. students who bring in more math background	Fall 2023 to Fall 2024	Four-year graduation rates, student success metrics improve
4) Improve hiring and retention procedures to increase diversity of faculty backgrounds.	Fall 2023 to Fall 2024	Hiring exceeds median diversity statistics of computer and data science departments in the AAU.
5) Provide strong advising to guide/orchestrate students through existing courses	On-going	Four-year graduation rates improve
6) Provide support for peer mentoring networks	On-going	Number of students using this resource grows with capacity
7) Invest in innovative pedagogy (both research and application)	On-going	Student success metrics improve

S4) Build a diverse faculty who prioritize collaboration with domains and multidisciplinarity by capitalizing on:

- our location on the West Coast with a lower cost of living than other cities
- competitive compensation and endowed chairs
- clear roles, rights, responsibilities and expectations for interdisciplinary faculty
- our history of transdisciplinary institutes and centers
- centering DEI in everything the school does

Two Year Objectives:	Timeline:	Measures of Success:
1) Research how other institutions handle positions split between academia and industry.	Winter 2023 to Fall 2023	Policy making explicit how university will do this and how to handle resulting IP issues.
2) Identify research themes for searches that can be expected to result in a diverse pool, or tools-based searches.	Spring 2023 to Winter 2024	Identification of search areas w/ diverse pools.
3) Pursue professor of practice positions – teaching part-time in skills needed by industry.	Fall 2023 to Fall 2024	Successful hires of professors of practice leading to instruction tailored to industry needs.

S5) Build appealing and innovative graduate programs that:

- lower barriers to entry for students from non-STEM backgrounds
- embrace hybrid and online education
- serve midcareer and nontraditional students
- partner with other areas of strength on campus to develop new degrees

Two Year Objectives:	Timeline:	Measures of Success:
1) Imitate existing master's degree internship programs but design curriculum around data science and / or computer science and industry needs.	Fall 2023 to Fall 2024	Program proposal(s) that includes an assessment of program demand, program capacity forecast, and required resources/financial viability
2) Hire coordinator to manage industry relations including student placement and curriculum evolution.	Fall 2023 to Spring 2024	Financial resources acquired to fund the position Coordinator hired Number of successful internship placements.
3) Do market research on the need for online programs serving students already in the workforce. Address existing supply of such programs and existing need for graduates.	Spring 2023 to Summer 2024	Well benchmarked market research report completed
4) Develop 4+1 program using existing majors to feed into master's degree programs.	Fall 2023 to Fall 2024	Program proposal created
5) Develop curriculum to provide training on soft skills including group work and professionalism.	Fall 2023 to Fall 2024	Curriculum created and submitted for approval

S6) Build a research home and community**,** that welcomes faculty and students from across campus to collaborate and learn from one another by offering resources such as:

- shared collaboration space
- affiliated membership
- research administration and grant writing support
- technical training for graduate students
- seminars and journal clubs
- computational resources

Two Year Objectives:	Timeline:	Measures of Success:
1) Create an interdisciplinary research institute around data science (exact theme TBD)	Fall 2023 to Fall 2024	Principle Investigators (PIs) have joined
2) Build a team of research professors that can help catalyze new and larger research grants	Fall 2023 to Fall 2024	Members added, the number of new and large research grants applied for and received has increased
3) Create a “popular” data science seminar series (i.e., not technical, but run through the data science institute)	Spring 2023 to Fall 2024	Steadily increasing attendance
4) Provide drop-in tutoring/resource services (open to all, not just DS majors) in support of applications of data	On-going	Steadily increasing usage of resources
5) Provide support for self-organizing structures like a student data science club, network, peer mentors, etc.	On-going	Active participation in these entities

S7) Build a teaching home and community that welcomes faculty from across campus to collaborate, coordinate, and learn from one another in the following areas:

- Create an inventory of all CS and DS related courses across campus
- Move relevant existing CS and DS courses into SCDS
- Course harmonization of CS and DS related courses across campus
- Develop infrastructure to support the co-creation of new courses with domains
- Inclusive pedagogy to lower barriers for student success

Two Year Objectives:	Timeline:	Measures of Success:
1) Conduct inventory of DS and CS type courses offered across the UO, identifying areas of overlap and opportunity	Winter 2023 to Fall 2024	Point in time inventory complete
2) Build a course content coordination team, focused on maintaining pedagogical cohesion across the SCDS	Fall 2023 to Fall 2024	Effort leader identified and integrated with curriculum committee
3) Work with domains across campus to help with harmonization of content and tools of their CS/DS related courses	Fall 2023 to Fall 2024	CS/DS courses in domains across campus are more similar in content and approach.
4) Create opportunities for transdisciplinary course development of CS/DS related classes with domain partners across campus	Fall 2023 to Fall 2024	One or more new courses developed between at least two units
5) Move existing courses CS and DS specific courses into SCDS, including administrative modifications such as renaming and renumbering	Fall 2023 to Fall 2024	Set of existing CS and DS related courses have been re-established in SCDS
6) Develop infrastructure to help faculty employ inclusive pedagogy in existing and new courses	Fall 2023 to Fall 2024	Principles and best practices for CS/DS inclusive pedagogy have been developed and distributed.

S8) Create a team focused on industry partnership as one of the foundations of the school, that will:

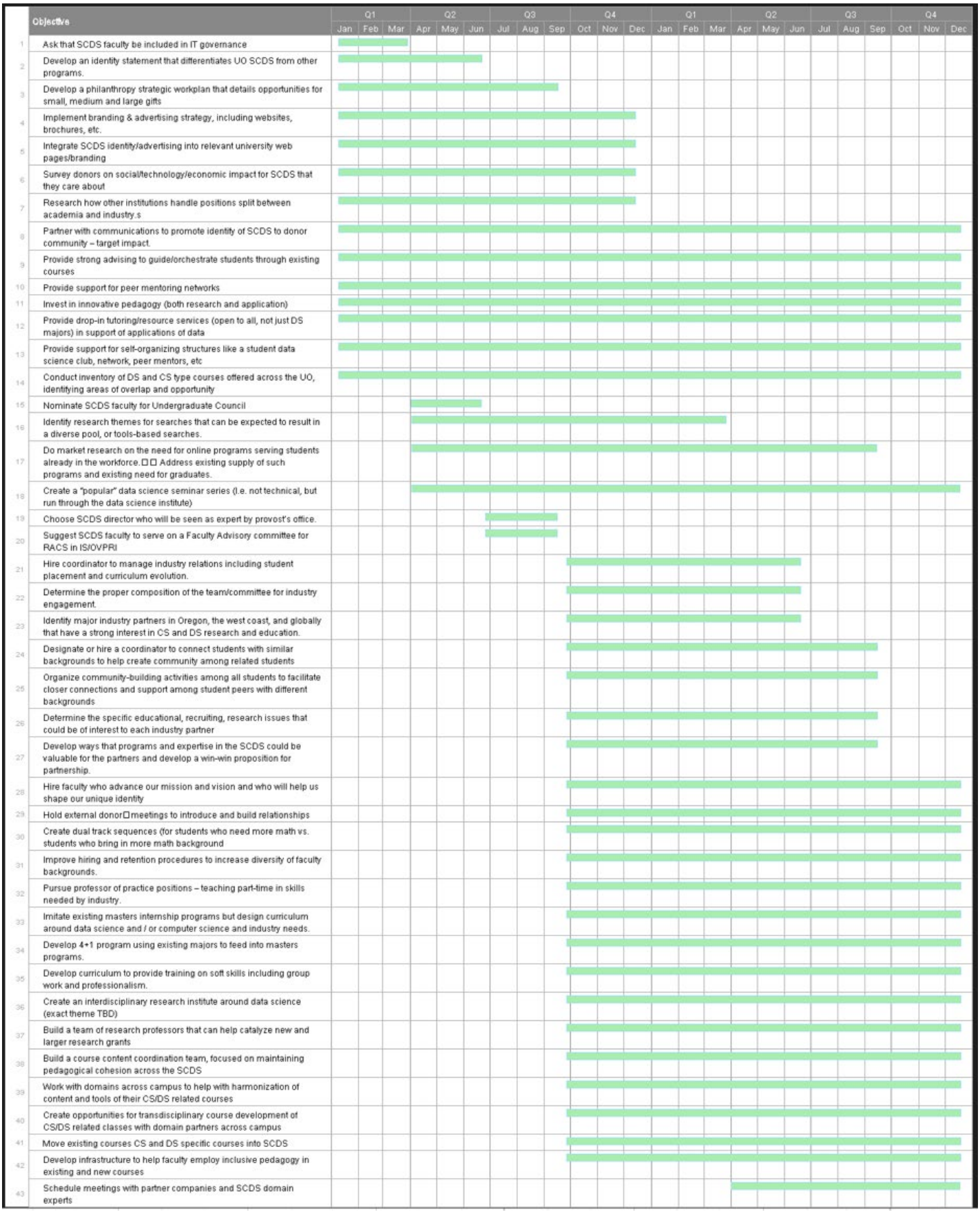
- broaden the road to internships and other experiential learning opportunities
- provide feedback to ensure our students are prepared to succeed in these opportunities
- discover opportunities for research partnerships with industry on the west coast and beyond
- provide pathways for research discoveries to have positive societal impacts

Two Year Objectives:	Timeline:	Measures of Success:
1) Determine the proper composition of the team/committee for industry engagement. This committee requires: - Coordinator to manage logistics (UO industry relations potentially) - Domain experts with research/educational expertise related to a specific industry partner.	Fall 2023 to Spring 2024	Guidelines for forming the committee are determined Capable coordinator is identified and designated Domain experts in CS and DS are identified and recruited
2) Identify specific major industry partners in Oregon and along the west coast, and even globally that have a strong interest in CS and DS research and education.	Fall 2023 to Spring 2024	Major industry partners are identified and prioritized based on criteria such as importance as employers, likelihood to join etc.
3) Determine the specific educational, recruiting, research issues that could be of interest to each industry partner	Fall 2023 to Summer 2024	Issues of interest to companies are identified Compelling propositions are developed
4) Develop ways that programs and expertise in the SCDS could be valuable for the partners and use them to develop a win-win proposition for partnership.	Fall 2023 to Summer 2024	Issues of interest to companies are identified Compelling propositions are developed
5) Schedule meetings with partner companies and SCDS domain experts to discuss partnership. Improve the process for future meetings.	Spring 2024 to Fall 2024	Meetings are scheduled and held. Guidelines or best practices for engaging with industry partners are developed

S9) Serve the university by providing university leadership with expertise in ways that computer and data science can inform and support institutional priorities

Two Year Objectives:	Timeline:	Measures of Success:
1) Ask that SCDS faculty be included in IT governance	Winter 2023 to Winter 2023	SCDS faculty exist in IT governance
2) Nominate SCDS faculty for Undergraduate Council	Spring 2023 to Spring 2023	SCDS faculty exist on UG council
3) Choose SCDS director who will be seen as expert by provost's office.	Summer 2023 to Spring 2023	Director of sufficient stature in place
4) Suggest SCDS faculty to serve on a Faculty Advisory committee for RACS in IS/OVPRI	Summer 2023 to Summer 2023	Members of FAC from SCDS exist

Objectives and Timeline Gantt Chart:



Appendices:

Below appendices are formatted as active links.

A1. Strategic Planning Committee Membership.docx

A2. Strategic Planning Process Description

A3. SWOT Analysis All Goals.pdf

A4. SWOT Analysis and Aligned Strategies

A5. Strategies Mapped to Goals and Strategy Themes and Ranked

A6. Meeting Materials

- 22.06.06 Meeting_1
- 22.06.22 Meeting_2
- 22.07.11 Meeting_3
- 22.08.01 Meeting_4
- 22.08.15 Meeting_5
- 22.08.29 Meeting_6
- 22.09.12 Meeting_7
- 22.09.28 Meeting_8
- 22.10.12 Meeting_9
- 22.10.26 Meeting_10
- 22.11.09 Meeting_11
- 22.11.16 Meeting_12
- 22.12.7 Meeting_13