The College of Behavioral and Social Sciences

University of Maryland College Park

Information Technology Strategic Plan

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Introduction

The committee members were charged with developing a computing strategy for BSOS that accounts for recent changes in the provision of IT resources by the Division of IT and the evolving intellectual landscape of research computing in the social sciences. In the view of the task force, solving these problems have two essential components:

A) Define a strategic vision for BSOS with regard to the nascent field of Computational Social Science (CSS).
B) Update core competencies in OACS to support IT-related research and teaching, especially with regard to high-performance computing (HPC).

We believe a simple *supply-demand* analogy explains the relationship between these two components: BSOS faculty need IT resources for their research and teaching, and this drives *demand* for the hardware and software services *supplied* by OACS.

CSS is an emerging interdisciplinary science that needs to leverage more computational resources than what conventionally social scientists have used in the past. The college has made significant investments in both sides of the equation by investing in state of the art and comprehensive computing infrastructure (e.g. BWIFT and server room upgrade) coupled with hiring computationally proficient faculty (e.g., CSS cluster hires). However, current HPC resources remain underutilized because many faculty and staff are either unaware of the resources or do not understand how to utilize these resources. OACS can help in both regards, but doing so comes with a substantial resource burden. Thus, the strategic vision we suggest in this document will address both the *supply* and the *demand* aspects of computation within BSOS.

We believe it is crucial for OACS to "keep the trains running on time" by providing critical IT resources for teaching and research, but our computing strategy also offers an opportunity to lay some new track. We believe there is a significant opportunity to build upon UMD's tradition of world-class research and instruction and possibly to propel BSOS into a leadership role in the nascent field of computational social science. The goal of this document is to outline the key aspects of this strategic computing vision, which we have defined through outreach to faculty and staff within BSOS, and through our own internal discussions, knowledge, and experience within the University and beyond.

In favor of brevity, this document summarizes our findings and presents preliminary recommendations. We first outline a bigger picture vision for a Computational Social Sciences Institute (CSSI) within BSOS; then we propose strengthening IT competency across BSOS with the targeted expansion of OACS with staffing additions to improve the delivery of research computing services to existing academic units. Whenever possible we have placed supplementary information in Appendices. These include the Dean's Charge for the committee (Appendix A), Chair Interview Questions (Appendix B), Chair Interview Notes (Appendix C), Faculty Survey (Appendix D), and the Proposed OACS HPC Support Competency Chart (Appendix E). Additionally, faculty Survey Responses are presented in a separate spreadsheet.

Bigger Picture Vision –
Development of the Computational Social Sciences Institute (CSSI)

Over the past decade the nascent field of Computational Social Sciences (CSS) has emerged and universities worldwide have begun to form institutions and programs to support faculty and student research in this area. A foundational paper, "Computational Social Science" was published in the journal *Science* in 2008[1]. CSS is a broad and highly interdisciplinary field, requiring both knowledge of social science theory, and the technical expertise most commonly found in departments of computer science. As the field of CSS continues to develop and define itself, researchers are working with ever more sophisticated models from fields in the traditional STEM sciences such as physics, biology, and mathematics. At the same time, the social sciences also are becoming a player in this work, as they begin to amass and work with larger and more comprehensive databases that require ever more advanced expertise and collaboration with applied math, spatial analysis, agent-based modeling, network analysis, parallel programming, and Bayesean statistics serving as some key examples. Moreover, sophisticated computational methods are becoming *de rigueur* in top-ranked journal publications and for competitive research grants. With a growing population of researchers in BSOS using these methods, and the increasing *need* for others to start doing so to stay relevant as their fields advance, we believe it is important for the College to continue supporting interdisciplinary CSS research at the University of Maryland.

BSOS has a history of supporting CSS research as demonstrated by the recent CSS cluster hires, a substantial investment in an HPC resource (BSWIFT), contribution to the new Division of IT data center, support for research computing staff, and the appointment of an Assistant Dean of Research. Yet, many of these resources remain underutilized, and more importantly those who do use the resources often do so in isolation and in the absence of a larger culture and community of scholars supporting these advancements.

While the problems outlined above could be approached with smaller "band-aid" level solutions, we instead believe there is great opportunity to take a more systematic approach in the form of a BSOS CSS Institute (CSSI). The BSOS CSSI would have a dual research and education focus – the latter through a CSS Certificate Program. Few such institutions and educational programs currently exist (see Table 1) so it is possible that this could catalyze UMD into a leader in the computational social sciences. Admittedly this is an ambitious proposal, but the key components of the CSSI could be implemented singly or as part of a phased implementation, as additional resources including funds from the certificate program become available. Table 2 outlines these components.

Returning to the idea of culture and community, the creation of a BSOS CSSI would enable like-minded researchers to come together to learn from each other, form collaborations and to work together to train the next generation of CSS researchers. To continue the supply-and-demand analogy introduced above, the CSSI would

[1] Lazer et al. Computational Social Science. *Science* 6 February 2009: Vol. 323 no. 5915 pp. 721-723. DOI: 10.1126/science.1167742

dramatically increase *demand* for the hardware and computational infrastructure currently provided by OACS. OACS, then, would be responsible for supplying these technical IT resources to BSOS and CSSI faculty and students. Thus, creating a CSSI would be a structural solution to the current under-utilization of certain IT resources, and in particular, BSWIFT.

This brief summary is not intended to be a comprehensive proposal; rather, our goal here is to suggest that forming a CSSI could be an important component of the BSOS Strategic Computing plan. If this idea is of interest, a new task force could be charged to draft a more comprehensive proposal.

Table 1: Some Existing CSS Programs.

Program	**Notes and URL**	**Degrees offered**
George Mason – Department of Computational Social Science	The first CSS program in the country. http://css.gmu.edu	PhD, MA, Certificate
Stanford Center for Computational Social Science	Best model for proposed BSOS CSSI. https://css-center.stanford.edu	Certificate
Santa Fe Institute – Graduate Workshop in Computational Social Science Modeling and Complexity	http://santafe.edu/education/schools/computational-social-sciences/	3-week Summer Workshop
U Mass Amherst	Described as an "Initiative"; seminar series and faculty affiliations http://www.cssi.umass.edu	None.
SAMSI (Statistical and Applied Mathematical Sciences Institute)	NSF funded multi-university consortium http://www.samsi.info/programs/2013-14-program-computational-methods-social-sciences-cmss	Graduate and undergraduate Workshops, and K-12
Carnegie Mellon – CASOS	http://www.casos.cs.cmu.edu/phd/phd_apply.php	Can receive a PhD or MA through approved departments and affiliating with CASOS

Table 2: Key Components for the BSOS CSSI.

Affiliated Faculty	Faculty affiliates from existing departments within and outside BSOS
Core Faculty	Core CSS faculty members with hard-lined funding
Workshops	Short workshops (summer and J-Term) available to UMD and non-UMD students in key CSS skills. E.g., database design, web-scraping, visualization, network analysis, "software carpentry".
CSS Certificate Program	Provides sufficient technical training in CS to allow students to perform CSS research while enabling them to focus on their social-science driven research questions. Core courses to earn CSS Certificate (15-18 Credits); Introduction to CSS (New); and additional coursework from list of approved UMD courses organized around key CSS themes: data mining, data ethics, visualization, natural-language processing, computational statistics, and modeling.

Lecture Series and/or CSS Conference	A Seminar series of UMD and invited lecturers and leading scholars highlighting CSS research and methods.
Small Research Grants	Small internal grants will stimulate CSS research within the college by providing research-enabling funds to faculty and students. Project-specific and awards to be in the form of RA funding, CPU hours on HPC resources, and/or faculty course releases to perform CSS-related research.

Strengthening IT Competency – Targeted Expansion of the Office of Academic Computing Services (OACS)

With a history dating back to 1919, the College of Behavioral and Social Sciences (BSOS) at the University of Maryland College Park is a premier institution of academics, instruction, research, innovation and entrepreneurship where faculty, staff, students, alumni and friends work to "Be the Solution" to the world's great challenges. Such challenges, if to be resolutely overcome, must be supported by a robust technical infrastructure that meets or exceeds the IT needs of BSOS. Component examples of that infrastructure include research computing, fast network connections, world-class data centers and teaching infrastructure, a governance model that facilitates the fair use of IT, and a strong relationship with the Division of IT. These services are provided to BSOS faculty and research units by the Office of Academic Computing Services (OACS) (which works in close coordination with the University-wide Division of IT), and various in-house Departmental IT staff. OACS provides IT infrastructure (teaching labs, software, and IT services) to many of the departments and research centers within BSOS, while some units manage their own IT resources. The organizational structure, values, and goals, and strategic plans for OACS were submitted to the Dean's office in an October 2013 document[2] so these details will not be presented here, however Table 3 illustrates how IT services are provided within BSOS. As The Division of IT develops the new RiverTech facility OACS may find it optimal to collocate some IT hardware services at this location.

All UMD IT providers aim to deliver a world-class teaching experience for students, and provide faculty with the tools needed to conduct cutting edge research. To assess how well we have succeed we conducted interviews with each of the departments Chairs (Appendix B & C) and published an online faculty survey (Appendix D). The results from these data collection efforts are summarized here.

Instructional Support

By and large, there were few complaints about the BSOS teaching infrastructure (supported by the Division of IT, and soon-to-be by the Provost). Most of the classrooms where BSOS instructors teach are now equipped with teaching technology (4 classrooms in Lefrak do not have any technology), although there was some unhappiness about the lack of a second projector in the larger lecture halls (Lefrak and Tydings), and size of the Lefrak computer labs. For whatever reason, there was no discussion about the St. John's Teaching and Learning Center.

[2] The Office of Academic Computing Services (OACS). Strategic Technology Plan. Version 10212013. October 2013.

Table 3: BSOS IT structure (Collaboration among the IT groups is common).

Unit (s)	IT Managed By	Comments
AASD, ANTH, CCJS, GVPT, HESP, PSYC, SOCY,	OACS	Peripheral support for HESP and PSYC labs
ECON	ECON internal resources	ECON runs its own email and AD, as well as a research cluster.
GEOG	GEOG internal resources	GEOG manages numerous high end computing installs as well as a VDI arrangement in a GEOG lab.
JPSM	JPSM internal resources	Moving to the cloud; concentrating on distance learning / video conferencing
Research Centers	Various (some supported by OACS, others supported by other resources)	

Research Support

The interviews revealed a divide between those departments and individual faculty who believe computational science is crucial to their future research program, and those who have no need for advanced technologies. There is a significant amount of computationally intensive social science research occurring in Geography and Psychology, and less in other departments, although skills vary by individual faculty. There was general consensus that the strongest demand comes from newer faculty and graduate students, and that this demand will continue to grow, even in departments that traditionally have not employed advanced computation. A minority of faculty were aware of OACS' existing HPC resource (BSWIFT), but those who were familiar with the technology thought OACS might be able to provide some expertise on how to interface with the hardware, but they won't have people familiar with the particular research applications and software packages in each area of research. To close this gap, individual departments would need to hire costly staff people who are un-intimidated by the hardware, but also familiar with the research needs of specific sub-disciplines.

An important theme that arose particularly in Geography is that some faculty require specialized HPC hardware for large-scale spatial analyses and that BSWIFT was not designed for this purpose. BSWIFT is a general-purpose research HPC and it has many uses, however, it is not designed for all types of research and these faculty should be allowed to be computationally independent and self-sufficient.

Research Computing: The Human Dimension[3]

As stated in the BSOS Technology Review (August 2013), a HPC support competency is needed to cultivate and expand the HPC capabilities provided by the College's general purpose cluster (BSWIFT). Although existing staff resources can be used to provide some hardware support, there is no availability within BSOS to provide complex architectural design and support, application level assistance, and operational training to researchers. Staffing to overcome these challenges will require funding. Estimated costs are noted in Table 4.

[3] BSOS, in response to the submission of the OACS Strategic Technology Plan (October 2013), is proposing a two person HPC support team (Appendix G); one person would function as a high-end architect (includes complex code parallelization) while the other would be available to work directly with users on tasks such as optimizing code.

Table 4: Cost implications of hiring additional research computing staff[4]

Job Category	Position	Estimated Yearly Cost ($)
Architecture	HPC architect	$100k
User support	Computational specialist	$ 70k
[redacted]	TOTAL---->	$170k

IT Governance: A Rebuilt Computer Advisory Committee (CPAC)

A governance structure helps to share in technology decisions that affect the entire BSOS College. The Computer Policy Advisory Committee (CPAC) was established to serve as an IT governance structure for BSOS. Although on hiatus for several years, CPAC should be reconvened as the BSOS IT environment has changed significantly since the committee last met.

CPAC should be comprised of one representative from each BSOS academic unit as well as one person from each College level center, as defined on the BSOS home page. The Dean or designee will appoint a representative from the Dean's Office to serve on the Committee. The committee's charge would come from the Dean, and would be modified as needed to accommodate change in the compute environment. CPAC should be reconvened and meet on a regularly scheduled basis. Its responsibilities should be as follows:

- Provide input into BSOS wide technology projects
- Give input to establishing or updating BSOS wide technology policies and procedures
- Distinguish between University vs. BSOS specific technology project initiatives.
- Assess outcomes and establish accountability through pre-defined performance measures and criteria
- Develop communication channels between BSOS departments and CPAC to understand technology decisions, services, and support

Recommendations and Conclusion

Based on our research and discussions we believe the BSOS Strategic Computing Strategy should address essential IT competency across research and teaching endeavors among the BSOS academic units, while at the same time work towards the development of the BSOS CSSI.

Our specific recommendations are to:

- Work towards establishing the BSOS CSSI as an independent academic unit within BSOS
- Reconstitute CPAC to improve IT governance
- Targeted hiring to increase IT competency including:

[4] In terms of BSWIFT maintenance costs: existing 3 year arrangement expires 2/2015; year 4 (expires 2/2016) maintenance would be $16,000 (estimate) while year 5 (expires 2/2017) would be $17,600 (estimate based on 10% cost escalation).

    - HPC Architect to improve the use of existing HPC resources
    - HPC Computational Specialist to improve awareness of BSOS resources
- Increase participation in CIC, Educause, and other forums to keep abreast of IT trends in higher education.

The task team believes it is important to maintain the ongoing IT support operations of OACS and to invest in the additional research computing personnel needed to take best advantage of BSWIFT and existing faculty research. BSOS continues to evolve with regard to its relationship with the Division of IT and may leverage new resources as they become available. Strengthened partnerships, both internal and external, are being created to align BSOS as strategic entity within the IT fabric of the campus. Such partnerships will ensure that technology solutions, whether they are research oriented, focused on a teaching issue, or supporting the business of the College, are well designed and appropriate for the stated needs, and in compliance with the CPAC governance framework.

In addition, over the past decade Computational Social Science has emerged as a unitary domain of research and BSOS could play an important role in defining this new interdisciplinary field of research. We make no recommendations regarding the rate or pace that a CSSI might be explored or pursued, as that decision must be made within the University-wide context and budgetary constraints as a key criteria. Phased, incremental, or piece-meal approaches are all possible. For example, demand for HPC resources could quickly be stimulated at low cost by issuing an RFP for CSS-oriented projects to fund RA positions. Regardless of the approach (if any) chosen, the task team believes that moving in this direction would increase demand for research computing services and could position BSOS as a leader in the nascent field of computational social sciences.

Thank you for the opportunity to prepare this report. We hope you find it useful.

Chari: Giovanni Baiocchi, GEOG

Dan Navarro, OACS

Sean Downey, ANTH

Saurabh Channan, GEOG/ OACS

Jim Gimpel, GVPT

Carl Lejuez, Dean's Office Representative

Appendix A: Dean's Charge for the committee

Task Team on BSOS College Computing Strategy

A BSOS College strategic plan need to be developed but it needs to be high level and should concern itself primarily with those activities which should be carried out at the College level. In particular it should consider the role of high performance computing, other changes in technology, changes in the campus computing landscape. The plan should be consistent with the campus strategic computing plan. A specially selected strategic task force should prepare a report for the Dean.

The plan should include but not necessarily be limited to the following:

1) Identify those activities which should be carried out by the college in OACS differentiating these from those which should be carried out in college units and those which should be carried out at the University level.

2) Role of the college computing services with respect to teaching and research.

3) Developing a community of expertise amongst faculty in relation to computing.

4) Organizational structure of OACS.

5) Upgrading OACS staff competencies especially associated with increasing involvement with high performance computing. It seems self-evident to me (I may be wrong) that we need more human support for high performance computing in BSOS.

6) Governance structure of college resources.

7) Implications of the plan on the OACS budget.

8) Other matters as the committee sees fit to include.

I envisage that the report is between 5 and 10 pages in length. The above defines the topics which should be included and not necessarily the structure of the plan itself.

A few additional comments may help:

i) I envisage the University progressively providing more and more services through its data center in accordance with the campus strategic plan and resources already be made available by campus.
ii) Whatever the services provided by the University more discipline-related services will likely still need to be provided by the College.
iii) In the medium term I think that significant physical computing resources should not be housed in departments because of the expense of doing so in providing adequate power and HVAC.

iv) It is likely pointless looking beyond 5 years given the continuing rapid changes in technology.
v) In carrying out the work the views of departments, centers and as needed individuals should be considered.
vi) The Task Team may wish to take account of earlier documents prepared on college strategy.
vii) It may also wish to consult with the Dean further for clarification.

Appendix B : Chair Interview Questions

College of Behavioral and Social Studies
IT Strategic Plan
Questionnaire for Department Chairs

Definitions:

- Technology: Broad term that encompasses things like technology equipped classrooms, clickers, ELMS, Panopto lecture capture, Adobe Connect, etc.
- Computing: Term that describes the analysis, by some type of computing device (desktop work station up to very high performance computing), of small to very large data sets.

1. Do your faculty feel that technology and computing are facilitating teaching and learning, or are obstacles to them?
    a. Facilitating
    b. Obstacle (why)

2. Do your faculty feel that technology and computing are enabling or hindering their research?
    a. Enabling
    b. Hindering (why)

3. What are the technology and compute needs of your faculty conducting research? (open response)

4. What are the technology and compute needs of your faculty teaching a class? (open response)

5. Are your faculty aware of technology and computing resources available to them?
    a. Yes
    b. No

6. Are ***you*** aware of such resources?
    a. Yes
    b. No

7. Are there any other technology and computing issues you'd like to discuss? (open response)

Chair:_____

Appendix C: Chair Interview Notes

Nan Ratner
December 11, 2013

Is technology and computing facilitating teaching and learning, or hindering it?

- It depends on type of class.
- Clinical folks have returned to "chalk and talk".
- Change of LMS was disruptive. Chalk and talk standard.
- Some classes don't need technology.
- Time management when teaching a class: you can get this with chalk and talk.
- Chalk and talk make people feel comfortable.
- Students are becoming passive.
- Technology and computing are enabling research. HESP at forefront of acoustic studies. Support is pretty good.
- HESP hires people to manage research efforts.
- Machines used are specialized, but all powered by desktop class machines with no issues.
- Programmers are hired.
- Younger faculty coming on board.
- Recommended that OACS hire a human factors colleague.
- Nan: "I've been pretty happy". Has been here a long time (early 80s).
- TerpWare is good.
- Professors are more savvy than students.
- Students are coddled.
- Make serious effort to learn about blended learning.

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Irwin Morris (12/9)

- Compared to the past, level of compute needs, at least for GVPT, is being met.
- In general, technology facilitates teaching and learning. Yes, there may be some frustrating components, but by and large, we are meeting GVPT needs.
- Users may come across issues with provided software and/or hardware, but usually, the faculty figure it out.
- Level of computing: not so great in GVPT. But as Big Data takes hold, level will increase. "Machine reading large amounts of written text.
- Stata and SPSS are heavily used software.
- Need more technology that facilitates discussion. Mentioned SmartBoards (executive use). VTC.
- Facilities are hard to find. Learning curve at UMD in getting software. Attitude is FIGURE IT OUT!
- Faculty awareness about IT support not good. They don't realize what is possible.
- Irwin: I know more about IT than in the past, but am not an expert. "I'll figure it out."
- OVERALL, things are good on all counts.

- When issues come up, faculty figure it out.
- Self sufficiency
- Need EFFECTIVE portals.
- Experiment! Technical barriers are minimal.

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Notes from Chair Interviews on BeSwift and Big Data Resources

Jim Gimpel/GVPT
December 2013

Anthropology

Most faculty are self-sufficient with respect to IT. Sean has the biggest computing needs on the 'big data' front. About 70% of the present faculty do use GIS in some way. The chair was not aware of the fact that OACS had pcs equipped with GIS software, nor was he aware that ArcGIS was now freely available via OIT.

There are some new faculty – 6 of them -- who don't know about the computing resources on campus. GIS is something that the faculty and grad students pick up seat-of-the-pants, starting at the library or taking a GIS course in Landscape Architecture in order to learn the basic "moves". There is a new GIS course being taught during the winter term via distance learning. It involves about 4 hours contact with the instructor, plus a lot of lab assignments. Anthro is definitely changing so that you need GIS skills no matter what you do. The ethnographers use text mining software. Clear impression is that the IT resources of OACS are not an obstacle or hindering teaching and research, but are not big enablers either. OACS doesn't do a good job advertising what services are available. Email is not a good way to do this. Most OACS emails announce network downtime and maintenance, so we need more than an email.

Sociology

The chair is vaguely aware of the resources available at OACS with BeSwift, the individual faculty are less aware. The chair as recently appointed a director of research (Lucas) who is in charge of evaluating research needs in the department against resources made available by the college, and helping faculty connect with university and college resources.

Presently, there is only one faculty member who has occasional projects that might require the use of a big data resource. This is a time series project with several million observations. But in Sociology there is no routine demand for big computing resources like there might be in Geography or Psychology. The demographers in the department may soon have big-data computing needs, perhaps in 2 years, but they're not there yet. Incoming faculty are more likely to express a demand for big-data computing than the existing faculty.

IT resources of OACS are underutilized for research because few faculty need them at present.

Larger lab spaces for teaching are a need.

Geography

The Geography chair was by far the most informed about the college's computing resources. He indicated that individual PIs do like to have their own computing resources close at hand. There is a spirit of independence among faculty motivating this preference. In the past, big computing resources were handled off-site. More of the demand is now being handled on campus.
Geography has recently assigned a professor (Hansen) to review BeSwift's capabilities against department needs. According to the report, Geography's computing requirements for managing global landsat data are different from what BeSwift can accommodate (There is a written memo on this).
Junior faculty and new faculty are being steered toward BeSwift. These faculty need to be introduced and trained into it. On the other hand, it isn't right for everyone. People have very specialized and boutique needs in terms of computing, which explains the desire for customized local set-ups. Paul Torrens cannot use it because he uses Microsoft products for visualization. There is no one-size fits all. People come with a way of doing things and this isn't always BeSwift compatible.
The users for BeSwift will be new hires and graduate students. It will be difficult to get more established faculty to change the way they're currently doing business. People don't want to wait to obtain tech support. Junior people will use it, senior people less so.

Psychology
Psychology, like Geography, definitely has big-data computing needs, particularly in the areas of neuroscience and neuroimaging. Recently faculty working in the neuroimaging center have expressed an interest in buying more computing capacity in the form of additional servers.

The challenge is connecting the faculty and graduate students to the BeSwift resource. Informing the faculty that BeSwift is a solution that can meet their needs would be a start. They are not aware of it, or what expertise it demands. There is concern among faculty that it might require too much learning, and operates differently from what they are accustomed to doing (see Geography remarks above). Apparently there has been a recent meeting with OACS to discuss computing needs but the chair is not aware of the outcome of that meeting. Some faculty have suggested that BeSwift is not sufficiently user friendly, but they also acknowledge that they don't have the human resources to evaluate it.

There is an exploding demand for big-data analysis in the neuroscience area. It would be great if BeSwift were a solution and we wouldn't have to address the issue at department expense.

One issue is the level of expertise needed to assist faculty with BeSwift. There are limits as to how much expertise OACS can be expected to provide, but what they can provide might still not be enough to get faculty to use BeSwift. We need someone, perhaps this is a unicorn, that knows the hardware as well as the software used by faculty in a particular area of research. Our efforts to find someone to hire in the department suggested that to find an IT expert like this, we would have to pay $100k or more in salary. We don't have the money for that. So the challenge is the expense of the appropriate human capital. How can we afford to get the kind of local expertise we need. The department can't afford that right now. But someone familiar with

research applications in psychology is needed who also has familiarity with the hardware.

Summary

Across these four departments, Geography and Psychology have the most pressing *present* demands for big-data resources. The demand for big-data computing is more likely to come from new hires and graduate students than from established faculty. An essential first step is connecting faculty to BeSwift and showing them that it can meet their needs. OACS might be able to provide some expertise on how to interface with the hardware, but they won't have people familiar with the particular research applications and software packages in each area of research. To close this gap, individual departments may need to hire costly staff people who are unintimidated by the hardware, but also understand the research needs of faculty.

Faculty like to be independent and self-sufficient, particularly older faculty with well-established habits and practices. The market for BeSwift will be mainly among junior faculty, new hires and graduate students.

No one complained about OACS teaching facilities except to note that there was a concern about lab seats. Also, some are unclear about how the labs are equipped and what software is made available.

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College Of Behavioral and Social Studies
IT Strategic Plan
Econ Department: Maureen Cropper (Chair), Cindy Clement (Undergraduate Chair), John Shea (Director of Graduate Studies)

In general the Chair believes that technology-wise the Department is in the "dark ages". The Department supports its own email system, Novell system, and a small HPC cluster, given the option she doesn't see the necessity of maintaining and housing them. During the discussion issues spanned from basic IT needs required for teaching effectively to large computational needs that could be facilitated by OACS. To understand/resolve/address some of the burden pertaining to research computing, the Department has setup a Compute Committee. Separate from the Compute Committee, the department also has 5 personnel helping out with IT related issues in their department, half an FTE is dedicated to their HPC needs, with assistance from two graduate students. Two separate FTEs provide the day-to-day Helpdesk services. Overall it seems that there is an unmet burgeoning demand for IT services ranging from teaching to research computing in the HPC arena in this department.

The Chair raised serious personal concerns with blended learning classes (ECON 200), where the clickers were not working to not having two projectors in the room. Logistics pertaining to holding large labs in OACs facilitated labs were not ideal for large classes. Director of Undergraduate, Cindy Clement, equally expressed the challenges pertaining to using CANVAS and Turning Point. Cindy mentioned that a few glitches in a class of 475 students were detrimental to the professor teaching the class and the student's capability to get through the course work. Similarly issues with TopHat, such as user not having accounts, answers are not registers, unable to login, etc. ELMS speed grader also has a lot of issues. At some point two people (Deb and John) went to DivIT to explain the issues with the system. The issues of inadequate lab space came up again when talking about ECON 424. In general Canvas is better that what was being used

before, however there are still a lot of issues that needs to be ironed out, and it seemed that DivIT support staff was not well trained to address the issues.

There is a general lack of awareness within the Department of computational resources within the Department, BSOS and the University. New faculty generally doesn't know about OACS and or BSWIFT. It was strongly recommended that BSOS give lunch seminars or workshops to help improve awareness of BSWIFT, its capabilities and ultimately its benefits to the conventional desktop computing. Start with the basics like, how to get an account on BSWIFT to how to compile and run your jobs on the clusters.

Computational needs vary from Big data crunching models where storage and compute are needed (Ginger Gin), conducting research with Ebay's data, to now experimentation with new econometric models pertaining to carbon trading, marketing, etc. Most of the staff are familiar with using COTS solutions, however there seemed to be a desire to shift towards open source software solutions.

Appendix D: Faculty Survey

College of Behavioral and Social Sciences
IT Strategic Plan
Faculty Survey

Definitions:

- Technology: Broad term that encompasses things like technology equipped classrooms, clickers, ELMS, Panopto lecture capture, Adobe Connect, etc.
- Computing: Term that involves the analysis, by some type of computing device (desktop work station up to very high performance computing), of small to very large sets of data.

1. What is your departmental affiliation? (pick one)
    a. AASD
    b. ANTH
    c. CCJS
    d. ECON
    e. GEOG
    f. GVPT
    g. HESP
    h. JPSM
    i. PSYC
    j. SOCY

2. What types of IT services do you receive from:
    a. Your department? (open response)
    b. OACS? (open response)
    c. The College? (open response)
    d. The University? (open response)
    e. I don't know who provides what.

3. Do you think that the communication channels by which IT services (including computing) are advertised are effective?
    a. Yes, the channels are effective. I am aware of various IT services.
    b. No, the channels are ineffective. I don't know what IT services exist.

4. How has technology and computing affected the way you teach and conduct research? (open response)

5. Do you feel that you have the right technology and computing tools (including software) to conduct research?
    a. Yes
    b. No (please explain)
    c. I don't conduct research.

6. Do you feel that you have the right technology and computing tools (including software) to support your teaching?
    a. Yes
    b. No (please explain)
    c. I don't teach.

7. Does your department have a user-group where faculty come together to discuss the application of technology and computing to teaching and research?
    a. Yes
    b. No

8. In general, do you feel that the College has the right amount of IT professionals supporting its technology and computing needs?
    a. Yes
    b. No (please explain)
    c. I have no idea.

9. Does your department have any type of IT governance structures put in place?
    a. Yes
    b. No
    c. I have no idea.

10. Do you think that some type of College wide IT governance group should be established?
    a. Yes (please explain)
    b. No
    c. I don't know.

11. Have you ever used any of the high performance computing resources on campus, such as (multiple select)
    a. DeepThought
    b. BSWIFT
    c. Department cluster
    d. I don't use any of these computing resources
    e. I didn't realize that such resources are available

12. If you have used such resources:
    a. How are you using these compute resources? (open response)
    b. How would you improve the user experience? (open response)

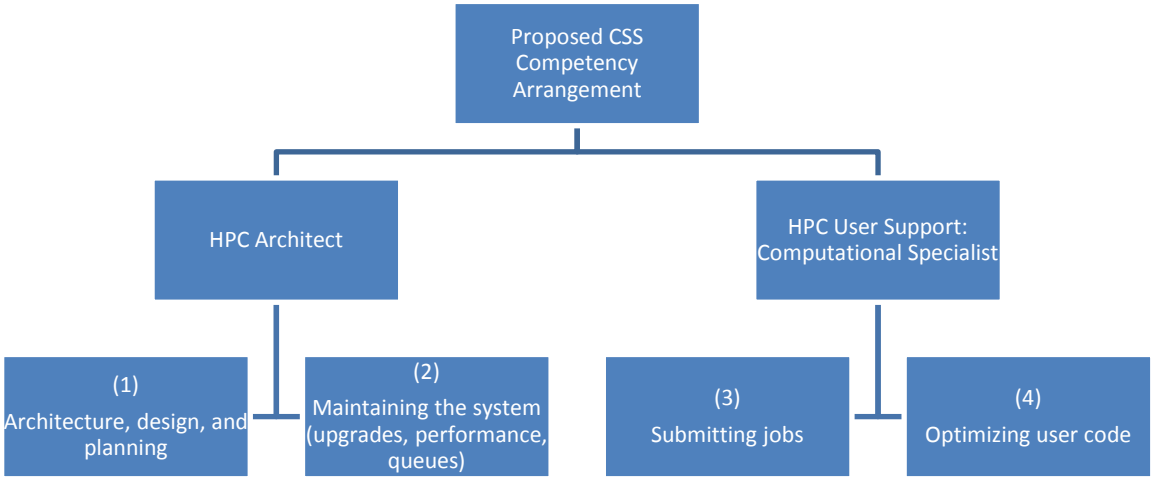
13. What is your primary software toolkit?
    a. List software needed for your teaching and research (open response).

14. Are you able to easily secure the software you need to teach and conduct research?
    a. Yes
    b. No (please explain)

15. (For those who have not used any of the compute resources on campus) Why haven't you used any of the compute resources on campus? (multiple select)
    a. I need an orientation to computing at UMD, but I don't know where to go for this.
    b. Online materials for computing at UMD are hard to find.
    c. Existing materials are too basic.
    d. There is no tech support available to fix compute issues as they arise.
    e. Other (open response)

16. Are there any other technology and compute topics you'd like to address? (open response)

Appendix E: Proposed OACS HPC Support Competency Chart



- Job responsibility 2: Computational Specialist can assist architect as demand requires.
- Job responsibility 3: Shared task, but majority of the work would be done by Computational Specialist. Architect could serve as back-up as demand requires.
- HPC architect and computational specialist will work together closely.