

**IT working group
draft report
March 7, 2014**

This is a critical time for IT at Haverford College, owing to the history of underfunding and understaffing, combined with the increased reliance on technology for pedagogy, scholarship and administration of the College. Higher Education's increased reliance on IT, both here on campus and nationwide, is a testament to major transformations in the nature and context of knowledge, learning, academic, and administrative work enabled by ongoing technological advances. It would be difficult to overstate the dual importance of sustaining current generation IT endeavors while keeping abreast of rapidly changing technological hardware and user needs to support and sustain a thriving academic community in the 21st century.

Sustaining current generation IT endeavors: At present, Haverford is working systematically to overcome past deficits in technological infrastructure and support with the goal of providing the community with consistent, sustainable, reliable and service-oriented technology resources in support of the teaching, learning, research and operational success of the College. We are understaffed relative to our peers and this will need to be addressed as new initiatives are undertaken.

Keeping abreast of rapidly changing technological hardware and user needs: Looking ahead, we plan to work aggressively to ensure that basic infrastructure continues to function, to close the IT gap with peer institutions, to provide a highly-responsive, client-focused technology environment for students, faculty and staff in all campus computing environments, and to stay abreast of emerging technologies that will enhance student-faculty pedagogy and scholarship. Along these lines, the IT division's future plans include fostering the development of core technology competencies across the entire community, exploring new and creative ways to use technology to enhance the curriculum and thus maintain the College's commitment to academic excellence, and designing and maintaining a suitable infrastructure to support these efforts.

Document overview: In this document, we (1) summarize IT's ongoing efforts to improve existing infrastructure and play "catch-up" in our overall capabilities, and (2) sketch a flexible, forward-looking plan to develop and sustain new initiatives in the future.

I. Developing and sustaining a robust IT system

A Capital Budget Plan that addresses IT deferred maintenance infrastructure issues has been developed.

The Plan identifies areas for investment and timetables for action. Investment in these areas will help to achieve the goals of this plan in general and position the institution for success with the infrastructure goals listed below.

Provide a robust, secure and high-performance network and systems infrastructure with sufficient staffing to support the teaching, research and computing needs of the College. This will be characterized by:

- Infrastructure upgrades to the network, wireless and classroom technologies in response to changing demands for higher service levels
- A fully-funded equipment replacement cycle to support high quality infrastructure services
- Staffing and equipment support for advanced scientific computing initiatives including large data storage, computing clusters and secure back-up
- Ubiquitous network, software and printing access from any location via a Virtual Desktop Infrastructure
- Creation of technology-infused spaces for learning and collaboration
- Highly functional course management and content systems used for teaching and learning
- Redundant, high-availability access to networked resources both local and in the Cloud

- Robust and modern resources to support the administrative and enterprise functions of the College
- Joint and collaborative development of core services utilized across the Bi-Co and Tri-Co
- Continued development and enhancement of the Bionic and Kuali systems to make them more stable and more user friendly. Once these goals are reached, resources should be invested to add useful features to these systems as the need arises.

Developing Core Competencies

Effective use of technology is necessary for Haverford College to maintain a high level of excellence in a competitive higher education environment. Faculty and staff are increasingly required to utilize technology in and outside the classroom to promote challenging and rewarding scholarship. Students are eager to utilize cutting edge technologies for research, experimentation, and presentation of ideas in new ways made possible by technology.

It is worth considering programs to develop core technological competencies for students and faculty/staff in tandem with technology upgrades described elsewhere in this document. Additionally, new programs and services will require additional staffing with an eye on higher skill levels and coordination of roles to avoid redundancy of efforts across disciplines.

For students: Similar to the writing requirement, develop a class required for graduation that offers students technological tools that can be applied to various areas of scholarship. Examples include web development, code du jour, computing in the sciences, and graphic design. The class should highlight agreed upon core competencies.

For faculty/staff: Develop a program that offers ongoing training opportunities conducted by experts located on campus. We should also require a stronger technical knowledge base from candidates when recruiting new hires.

In the rapidly changing technology landscape in which we do our scholarship learning and teaching there has become an increasingly diverse set of core skills that faculty, students and administrators need to have to be successful. Sustaining excellence among students, faculty and staff through the development of training will require investment in our human capital to achieve both fundamental and aspirational goals. We have suggested both fundamental and aspiration goals for each area.

- Administration & Support Staff
 - fundamental: Basic Training in the IT systems necessary for daily work
 - aspirational: Creation of a centralized place with high-level, highly trained support staff for walk-in assistance with complex projects; Hiring localized support resources for each building or campus quadrant to provide a higher level of user support
- IT staff:
 - fundamental: Strive for ever-higher service levels to the community
 - aspirational: Dedicated time to explore and develop innovative projects and services
- Library Staff
 - fundamental: Leading projects--using library collections and resources along with leading technologies to create new forms of scholarship and learning
 - aspirational: advancing collaboration with IITS Core services at a higher technical level; advancing the technological skills of librarians to stay current with trends in digital scholarship
- Faculty:
 - fundamental: A fuller engagement with classroom IT resources
 - aspirational: Dedicated time to develop and implement new ways of integrating technology into instruction
- Students:

- fundamental: Operational fluency with their personal computing device
- aspirational: Participation in a freshman technology seminar

II. Develop and sustain on-campus and outward looking collaborations

Collaboration is key to a successful liberal arts environment. Furthermore, successful implementation of and engagement with technology requires heightened collaboration as it requires significant capital expenditures; it benefits from disparate skillsets, some of which intersects with disciplinary expertise and some which are entirely outside the academy; and it ubiquitously crosses the entire enterprise of our college.

Rich relationships among faculty members from different departments, students, IT specialists and librarians will broaden the range of outcomes within the college. Collaborations and a coordination of efforts across the Tri-Co has the potential to result in fiscal efficiencies and create a seamless experience for our students and faculty. Partnerships at the national and international level increase our ability to engage in cutting-edge research and participate in an increasingly important dialog.

Key areas for collaboration as outlined below:

Teaching & Learning

- *Strong and flexible curricular and co-curricular teaching and learning.* This requires technology rich classroom and collaborative spaces throughout campus, such as those proposed in VCAM, renovated Magill Library, Music, and Sharpless. Robust technology within OAR and across campus will also be vital to experimentation and enriched teaching and learning.
- *Community-based forums for resource sharing and collaboration.* Current examples include the Teaching with Technology Forum and Save As Lightning Talks, both of which provide a showcase and platform for sharing new and innovative ideas.
- *Pedagogical Tools.* While attending to the strength of the personal nature of the Haverford education, teaching tools (flipped classroom, Clickers, Panopto, etc.) can enhance some pedagogical models. “Distance” learning might also enrich pedagogical aims:
 - Trico virtual-in-person (i.e., classrooms connected via web cameras & audio)
 - Blended classroom environments or supplementary MOOC access
- *Collaborative Pedagogy.* This is a model in which faculty from disparate departments or disciplines can partner with technology experts (other faculty, IT and/or library colleagues) to support technology-rich courses without requiring faculty to become technology mentors themselves. This model could be implemented in concert with and enhanced by Bryn Mawr’s Teaching & Learning Initiative.
- *Online Learning.* Although it is unlikely that the way we teach and learn at Haverford will be supplanted by online learning, there is a strong likelihood that some instructional models may be enhanced through the use of online instruction. We should explore the options presented by consortial online learning initiatives, such as the newly-forming Liberal Arts Consortium for Online Learning.

Research

- *Technology-rich spaces.* Collaborative research requires spaces for faculty, students and staff to work together with appropriate technology. VCAM, renovated Magill Library, Music, and Sharpless will all lead to stronger research collaborative opportunities within the community.
- *Staff expertise.* To support research that will increasingly take advantage of technology, the college will need staff (particularly IT specialists and librarians) who are abreast of disciplinary trends in digital research, hardware, and software. Faculty must have strong staff collaborators, including expertise in:
 - specialized database support & large scale data mining operations
 - digital scholarship & digital humanities
 - data curation services
 - digital asset management
 - large scale computing (e.g. scientific)

- *Tri-College infrastructure.* When research collaborations extend across campuses, they require network and storage infrastructure with seamless authentication.
- *National infrastructure.* The College should explore options that provide for a more robust level of network interconnectedness with other academic institutions. This could be accomplished through membership in groups such as Internet2, National Lambda Rail, and PennREN (the Pennsylvania Research and Education Network).

Scholarship & Publication

- *New and emerging forms of scholarship.* As new models of scholarship emerge, creating and sustaining multi-modal and multimedia scholarly projects will require IT and Library expertise and resources. Also, just as collaborative research will benefit from places dedicated to fostering it, collaboration on new forms of scholarship will be greatly enhanced by creation of technology-rich spaces that have been described previously.
- *Digital Humanities and Digital Scholarship.* The opportunity for Haverford to become a liberal arts leader in Digital Scholarship is currently aided by the Tri-Co Digital Humanities Initiative and the library Digital Scholarship team. To increase this opportunity, future technology plans will need to include:
 - Server support for experimental projects across the Tri-Co, and with national and international partners
 - Storage space and commitment for a variety of new forms of publications
- *Open access.* The opportunity to engage more actively in open access publishing will require support for an institutional repository and associated infrastructure.
- *Data publishing.* Investigate and support models of new data publishing (e.g., the grant from Richard Ball and Norm Medeiros)

Operational

- *Enterprise systems.* Insofar as possible, deploy enterprise systems (e.g., registration, advising, financial, etc.) in common with Bryn Mawr & Swarthmore.
- *New space planning.* Work in concert with departments, facilities, etc. on the design of new space projects (current projects including Music, VCAM, Library, Sharpless) in a way that optimizes funds, provides for greatest flexibility, and affords the most seamless user experience.
- *Authentication.* Unified authentication with Tri-College & national/international partners (e.g., Shibboleth and InCommon).
- *Cooperative purchasing.* Cooperative purchasing of hardware and software might save fiscal resources and allow us to leverage expertise Tri-Collegially.

III. New innovations and laying the groundwork for the future

IT's roadmap is driven by straightforward goals, as highlighted above in Sections I and II, and will be implemented as delineated by milestones such as those recorded below. Along this road, the developing technology-infused environment at Haverford must remain flexible to allow for the next generation of new innovations. Moreover, IT must be given more resources than presently available so that we may sustain functionality of core importance to the College. Once IT reaches such a level of support, then we can imagine the sorts of innovations that might be possible, and the sorts of staffing and funding needs that would be required to support them:

- To make efficient use of our small number of staff, while simultaneously trying to foster innovation, we strongly urge staffing at levels so that (a subset of) IT and other technical staff on campus are subscribed by core duties only 80% time, rather than 110% of time. The time cushion allows for both skill and programmatic development as technical needs inevitably rapidly evolve.
- As society becomes increasingly dependent on technology, the need for students to have opportunities to develop their technical expertise increases. The College must commit to engaging in increasingly innovative student outreach, such as the Hack-a-Thon lead by Prof. Sorelle

Friedler. Although Hack-a-Thons appeal mainly to people already deep in computer science, similar events could be created for other disciplines. For example, Jeremiah Mercurio and Laurie Allen in the Library are local experts on Text Encoding Markup language, used in digital scholarship of texts in the humanities, social sciences and linguistics. Give student teams basic training, followed by 48 hours to encode new texts in their discipline that will be made available for scholar worldwide, perhaps with parallel teams developing new visualization and analysis tools of these documents.

- To ensure that Haverford's graduates have the skills to thrive in today's society, we propose (to be worked out in detail with Computer Science faculty, the Educational Policy Committee, etc.): (i) Freshman seminars in Programming (analogous to writing seminars), (ii) half-credit Freshman seminars in programming as electives for students who want to jump into a hands-on experience with programming, and (iii) a Programming/technology-based distribution requirement.
- We propose the development of Faculty Seminars centered around the use of Technology in the classroom and/or in scholarship. There is precedent for such seminars (the Humanities Center seminars at Haverford and the Teaching and Learning Initiative seminars at Bryn Mawr) and the opportunity for synergy with visual studies initiatives.
- Excellent work in the digital humanities highlights the many generative ways scholars in the humanities and social sciences can use technology, tools, and methods developed in the sciences. Similar opportunities exist when scholars in the humanities bring their expertises and skills to bear in the sciences. Haverford needs to create a scholarly environment that fosters collaboration across disciplines. The College must commit the physical space, the technological resources, and the staffing support to promote real cross-discipline interactions between both faculty and students.
- Technology offers incredible opportunities for rethinking pedagogy and engaging students. Blended learning that combines technologies students can access both inside and outside the classroom, real-time student-to-student collaboration, and gamification point to some of the ways technology can enhance teaching. Haverford needs to devote the resources to imagining new ways to use technology to enhance the learning environment.
- Haverford must also encourage *all* faculty to explore innovative opportunities and reward those faculty who do so. To begin, the College should support faculty from different disciplines in co-teaching courses. Such support could include, for example: stipends to develop the course materials and methods; funds to cover travel, registration, and lodging to attend relevant workshops; dedicated IITS staff.

IV. Governance

In consultation with the Technology Advisory Committee, the IT Policy Committee and a Board Technology Task Force, develop and maintain an IT operational plan that is both proactive to emerging technological trends and reactive to immediate user needs.

We should create and formalize a decision-making process model to advance the use of technology generally across the College. That model should include a methodology for prioritizing initiatives in a resource-constrained environment.

We should also a need to create a framework for collaboration that includes explicit statements about the benefits of any collaborative efforts. The framework should also call articulate the principles guiding any collaboration.

Finally, we should develop a method for measuring the effectiveness and outcomes for any project, but especially those with a cross-disciplinary or collaborative scope.