Computing Annual Report

2017-2018 Academic Year

October 30, 2017

https://www.ias.edu/campus/computing/
**Introduction**

The purpose of the Computing Annual Report is to provide a concise summary of the major projects and initiatives on which the Computing team worked over the past year, as well as to introduce our areas of focus for the current year. Thank you for spending some time to review this report. Should you have any comments, or any questions or concerns arise, your feedback is always appreciated.

The first section of the report will highlight our accomplishments from the 2016-2017 academic year, which was another in a long string of busy years for IT improvements across the campus. This past year, improvements were focused on perennial issues including business continuity, enterprise applications and data security. In addition, areas such as digital scholarship were new to our focus. The section below will expand on these topics and many others.

Following that review, the second section will focus on our priorities and goals for the current academic year, 2017-2018. This year will also undoubtedly be a busy one. We will not only endeavor to continue to improve the services and support we provide to the Institute’s scholars and staff, but also participate in the planning and execution of the Institute’s new strategic plan, as well as the exciting projects physically transforming the campus including the renovation of Simons Hall and the construction of the Rubenstein Commons.

**2016-2017 Year in Review**

**Organizational Structure, Personnel, and External Resources**

In May, a third full-time position was added to Math Computing to help address the growing demand for new services and support within the school. Although at present the position remains unfilled, we anticipate the new Math System Administrator will assist the existing staff in administering the desktop and server systems in the school. In addition to the support they will provide for faculty, members and visitors, and contribute towards the administration of the school’s website.

Beyond this, the Computing department enjoyed a year of stability, with no additional changes to our current staff or structure. As always, we did benefit from the hard work of several contractors, interns and summer students, including Nicholas Helmstetter, Joshua Deibel, Krishan Perera, Thelma Garrison, Jonathan Bernstein, Shelby Jones and Julian Arzadon.

**Benchmarking.** As part of the Institute’s ongoing strategic planning, this past year Computing completed another round of benchmarking. This process allowed for analysis of the current structure of the team, as well as comparisons of our service catalog, support methodologies and budgets against those from similar institutions. This work benefited greatly from tools and data provided by Gartner, Inc., Educause, and discussions with several peers including the Mathematic Science Research Institute, Princeton University and Princeton Theological Seminary.

Overall, the benchmarking indicated that Computing’s existing service catalog was comprehensive, and our budgets were in line with our peers. Even with the added position noted above, Computing lagged the industry slightly in staffing as a percentage of total employees. Computing nonetheless received a satisfactory or highly satisfactory rating from 84% of the outgoing member class, and did so even as the analysis shows that IAS Computing also delivers higher levels of support than many of our peers.
Information Security, Business Continuity and Disaster Recovery

• **Lights-Out Datacenter (LODC).** As anticipated, this past spring the long-awaited Lights-Out Datacenter finally came online. This renovated space in the basement of the Activities building allows for improved resiliency to power problems for the campus network and critical IT services. Work in the space this past year included the relocation of one half of our Internet connectivity, the expansion of our enterprise data storage facility and the migration of our data backup system as well. Continuing work to re-engineer networks and services to better utilize this new resource will be discussed in the following section.

• **Improvements to Anti-spam/Anti-phishing.** This past July, following a sustained phishing campaign targeting our users, several improvements were made to the policies protecting our campus from unsolicited email and phishing attempts. These changes updated our existing policy to better reflect vendor recommendations and industry best practices, and have already proven to be effective in limiting the number of malicious messages reaching our community each day. The full details of the new policy can be found on the Computing website. As part of this effort, a “Phish bowl” was also introduced. This new service lists the top confirmed phishing attempts reaching our campus, and serves as a point of reference for our community. The Phish bowl can be found at:

  ➢ [https://security.ias.edu/phish-bowl](https://security.ias.edu/phish-bowl)

• **Secure, Cloud-based Data Backup.** Addressing an identified enterprise risk related to the security of our data backups, this past year Computing completed the migration to a new backup platform which eliminates traditional tapes in favor of cloud storage, and which ensures end-to-end data protection and encryption. Although the underlying system has been improved, these changes do not impact the data retention policies listed on the Computing website.

• **Travel Guidelines for Safe Computing.** To address the growing concern with information security when traveling domestically or internationally, Computing has issued a set of guidelines, best practices and tools for member of the IAS community. These guidelines can be found online, at:

  ➢ [https://security.ias.edu/information-security-travel-recommendations](https://security.ias.edu/information-security-travel-recommendations)

Infrastructure

• **Internet Connection Upgrades.** This past year, both legs of our Internet connection were upgraded. Both links are now 1Gb/s fiber-optics connections to our Internet Service Provider, NJEdge, and share a 600Mb/s Internet access pool. These upgrades improve the speed and reliability of our connection, and provide room for future growth of bandwidth intensive applications.

• **Consolidation of wireless networks.** Earlier in the spring, the campus wireless network infrastructure was simplified from three separate networks down to two. All IAS scholars, families and staff are encouraged to use the eduroam secure, authenticated wireless network while on campus. All short-term visitors and guests, as well as Internet-of-Things devices, are
eligible for the public IAS network. Full documentation of this change and connectivity instructions for all platforms are available online, at:

- https://www.ias.edu/wireless-user-guide

- **Cable Plant Upgrades.** Continuing the recent work to overhaul the physical network plant, several upgrades and additions were completed this year. New fiber cabling was run in several locations, between the main campus and the LODC, between Simonyi and Bloomberg Halls, and to the new Faculty Housing site. Ethernet cabling re-termination was completed for the 3rd and 4th floors of Fuld Hall, and new cabling was installed in the MOS and portions of Simons Hall.

- **Other Infrastructure Improvements.** Highlights of additional infrastructure projects that were completed this past year include:
  
  - **Wireless Network Improvements.** As an ongoing effort to improve the reach of the wireless network, several new access points were added across campus, and many others were upgraded. “Fast roaming” was also enabled to improve connectivity while traveling between campus locations.
  
  - **Campus Event Kiosks.** Touchscreen kiosks were installed in Fuld Hall and the Activities Building to help raise awareness of campus event opportunities.

**World Wide Web, Campus Databases and Data Integration (D&I)**

- **Institute Website.** In conjunction with IAS Communications and our external partner ZivTech, the IAS website continued to be a major focus this past year. Work continued on adding front-end features, including new types of “Ideas”, support for digital exhibitions, better video integration and a new, responsive scrolling feature which allows the “Today” section of the homepage to list all events. In addition, the team remains focused on continuously improving the back-end editing experience for all involved.

- **Administrative Computing.** This past year was another extremely active year in the ongoing upgrade of the administrative computing environment.
  
  - **HR/Payroll System Implementation.** Notably, work continued on the implementation of SyncHR as the new HR and payroll platform, culminating in the system being ready for benefits open-enrollment this fall. The system now handles all time tracking and PTO requests as well.
  
  - **Comprehensive Maintenance Management System.** Additional phases were also completed in the roll-out of the SchoolDude system. These include support for additional requests, improved routing and new workflows within the Facilities team, and the support for mobile device access for technicians. Groundwork was also laid for the use of additional SchoolDude modules addressing areas including event management, capital planning and preventative maintenance management.
  
  - **Donor Management System.** This past summer, the Institute’s donor and alumni management platform, Raiser’s Edge, was also upgraded. In addition, following the recent best practice employed with other administrative systems, the whole system was moved to the cloud. This move improves the availability of the information for
Development staff, as well as offering greater functionality for future integration of donor and alumni data with other campus information systems.

- **Identity Management, Directory Services and Member Credentialing.** This past cycle, Computing staff completed a change to the incoming member credentialing process aimed at being able to more quickly connect incoming members and their families to IAS resources, such as internal websites and communications. This effort is part of a broader focus on identity management and directory services that is also underway. A working group from across Computing has been meeting regularly to develop and implement a strategy for these areas. More details on the resulting projects will be discussed in the next sections.

**High Performance Computing (HPC)**
As planned, this past summer IAS completed the selection process and purchase of the 4th generation of our on-premises HPC cluster environment. The new system, an Intel Broadwell-based system provided by Dell Computer, will consist of 64 nodes, each containing 14 dual-core processors and 128GB RAM, interconnected by FDR Infiniband. These specs include significant upgrades from the 3rd generation Hyperion cluster, including 768 additional cores, faster CPUs, and more than double the RAM per core on each node. It is anticipated that this new cluster will achieve a performance of 55 teraFLOPS at double precision. Details about the availability of this new environment will be covered in the next section.

**Digital Scholarship at IAS (DS)**
- **Digital Scholarship Conversations.** This past academic year, IAS hosted for the first time, a series of discussions focused on topics and projects related to the burgeoning field of digital scholarship. Discussions included in-depth descriptions of exciting projects in DS, as well as relevant policy topics such as Open Access and institutional repositories.

- **Membership in NJ Digital Humanities Consortium.** In our ongoing effort to identify opportunities and resources to support IAS scholars working on digital scholarship projects, IAS has joined the NJ Digital Humanities Consortium. As part of our participation in this group, we have access to training opportunities taking place on other campuses, and also expand the network of experts and consultants available to IAS scholars.

- **Support for Projects in Digital Scholarship.**
  - **Zaydi Manuscript Tradition (ZMT).** This past April saw the release of the initial version of the ZMT portal in support of Prof. Sabine Schmidtke’s project. The portal provides open access to digitized collections of manuscripts from libraries recovered from throughout the region, and can be found online at:
    
    ➢ [https://www.ias.edu/digital-scholarship/zaydi_manuscript_tradition](https://www.ias.edu/digital-scholarship/zaydi_manuscript_tradition)

  - **Squeeze Digitization.** Working with a team including PI Angelos Chaniotis, Prof. Stephen Tracy, and staff from the HS/SS Library and IAS Development, a project plan was developed and testing was completed to prepare for the upcoming start of a project to digitize the Institute’s collection of Greek inscription squeezes currently stored in the...
Merritt Library.

**Media Technology Services (MTS)**

- **New Video Switching Equipment.** In an effort to stay current with evolving video standards, this past summer MTS upgraded its primary video switching infrastructure to a new switcher from Black Magic. This new device offers improved compatibility for video inputs and provides the recording technicians with the needed control.

- **Videoconferencing.** The past year was another busy year for videoconferencing on campus, with multiple conferences being conducted each week across academic and administrative domains. To handle this increasing demand, upgraded endpoints were added in West Seminar Room and the Investment Office, bringing the total number of available conferencing spaces on campus to five. In addition, this past year saw continued success with the use of Vidyo as the desktop platform for connecting external attendees to IAS-hosted conferences.

- **Live Event Streaming.** Also this past year, live-streaming of campus public events was added as a standard service for MTS. Streaming for events is done in collaboration with our Internet provider, NJEdge.

IAS Computing’s chief objective is to support the IT needs of scholars, scientists and staff of the Institute. The projects identified above, with their focus on improved operational efficiency and manageability, directly increase our ability to provide the resources necessary to continue to meet this ever-evolving goal.

**2017-2018 Goals and Objectives**

The 2017-2018 academic year will certainly be one of change and new ideas on campus. This will be true of the physical space as we continue work on Simons Hall, Rubenstein Commons and faculty housing, as well as strategically, as the planning process currently underway results in new initiatives and new areas of focus which must be addressed. Computing has worked tirelessly in the recent past to construct a technology platform capable of supporting these new initiatives, in addition to our support for the evolving needs of our faculty, members and staff.

The projects discussed in this section, both new and ongoing, reflect our persistent effort to ensure that for any challenges which confront the IAS community, our technology can be depended upon as part of the solution. The details of these projects are included below.

**Infrastructure**

- **Lights-Out Datacenter.** With the LODC now fully online, Computing staff are hard at work evaluating and re-engineering our core services to better leverage this new resource. Similar to work completed for our data backup last year, this year our goals include re-engineering full campus network redundancy, wireless network administration, directory services and remote access to take advantage of the new datacenter space.

- **Upgrade to Campus-wide Virtual Private Network (VPN).** Having worked this past
summer to identify the technology to support the next generation of secure remote access for our campus, we anticipate this upgraded system will be available for use later this fall, or early in the winter. In addition to expanded platform compatibility, we also aim to offer faster and easier access to needed IT services and resources through the new system.

- **Email.** As part of the effort to re-evaluate core IT services for better compatibility with the LODC, a particular focus will be placed on campus email. The goal of this effort will be convergence on a single email platform for the entire campus. A single email system will allow for greater functionality and communication and also improve Computing’s ability to control email-based threats and malware, such as spam, phishing attempts and viruses.

- **Support for Campus Construction Projects.** As campus construction projects continue in Simons Hall, Member Housing, Faculty Housing, along Olden Lane and for the Rubenstein Commons, Computing staff continue to work with the project teams to design and construct spaces that meet all future technological needs. This includes ample network connectivity and bandwidth, indoor and outdoor wireless coverage, audio/visual infrastructure and more.

- **Continued Adoption of Cloud Computing.** As various projects have warranted in the last several years, IAS systems have been strategically relocated to “the cloud.” As part of that effort, Computing has articulated a set of guidelines to be used to evaluate the “readiness” of various systems to be moved off-premises. This effort will continue this year as we work to re-engineer services and make administrative computing improvements.

### High Performance Computing

- **HPC Cluster Replacement.** The Hyperion cluster will be retired later this year, and its replacement will be brought online early in 2018. The new cluster, whose specifications were outlined above, will serve as the centerpiece of our campus-wide commitment to HPC for the next four years.

- **High-Performance File System Replacement.** Once the new cluster is online, the HPC team will turn its focus toward identifying the upgrade path for our high-performance file system. This system is expected to be selected this summer, with implementation to follow in the fall.

### Administrative Computing Environment

Work will continue in the coming year on improving the efficiency of the administrative computing environment, as well as reducing risks and ensuring compliance with changing regulations. This year’s work will focus on a number of areas, including:

- **Comprehensive Maintenance Management System (SchoolDude).** The implementation of the SchoolDude system will continue, with a focus on new modules for preventative maintenance scheduling and capital forecasting. In addition, work will also continue on refining the maintenance work request components to ensure they are as responsive as possible for the community.
• **Event Management.** SchoolDude’s Facility Scheduling module will also be implemented this fall to help manage the administration and execution of large-scale campus events.

• **Purchasing.** To bring the Institute into early compliance with new accounting best practices and regulations, a new system for overseeing the purchase requisition process will be installed. This system will standardize the submission and approval of purchase requisitions and automate the flow of a request throughout the process as it touches several information systems.

• **Point-of-Sale System Upgrade.** Upon the completion of the renovation of Simons Hall, an upgrade to the point-of-sale system will follow. The new terminals will provide increased functionality to Dining Services staff, allow for expanded use of IAS cards for payment at other campus locations, and provide the foundation for future dining services installations, such as Rubenstein Commons.

• **Housing Management.** An effort will also begin to research, identify and implement new tools to help manage the Institute’s administration of its housing resources.

### World Wide Web, Campus Databases and Data Integration

• **IAS Website.** The Institute’s website remains a central focus of the Computing team. Work in the upcoming year will remain focused on improving both the browsing and editing experiences of the site. In addition, site upgrades are planned for several groups including the School of Mathematics, School of Natural Sciences, Park City Math Institute, and others.

• **Software Library.** Throughout the year, Computing works to add to our library of titles new software tools or services that may be beneficial for IAS scholars. As part of this process, this year we have added a campus-wide subscription for Overleaf, a collaborative TeX editing environment. In addition, we are in the final stages of identifying a tool to provide “digital whiteboard” capability for collaborators. To get access to any of our licensed software, please contact your Computing helpdesk for more information.

• **Application Fitness Review.** As part of our effort to continuously improve our software development methods and our project management procedures, the Databases and Integration group is working this year to assess the current portfolio of applications that they support and better define adherence to business needs and technical requirements throughout. Using a methodology developed by Gartner, this work is aimed at ensuring that our limited resources for software development are being deployed to address our most pressing needs.

• **Identity Management, Directory Services and Member Credentialing.** As mentioned earlier, Computing established a working group last year to make recommendations for improvements in these important areas. Those recommendations are now being finalized and will become actionable projects later this year. These improvements will lay the foundation for other work outlined throughout this section, including website updates, two-factor authentication, remote access and other information security improvements.
Information Security, Business Continuity and Disaster Recovery

- **Pilot Implementation of Two-Factor Authentication (2FA).** A hold-over project from last year’s goals is the initial implementation of 2FA for our campus. 2FA solutions are gaining popularity as they are more secure and resilient than traditional password-based authentication methods. Early targets for 2FA at IAS include the new VPN platform mentioned earlier and administrative computing systems that store and protect sensitive information.

- **Cybersecurity Awareness Training.** As in all years, Computing’s Office of Information Security holds information security awareness trainings each October. This coming year, the curriculum will be expanded to focus not only on information security issues for scholars and families, but also include seminars with staff-specific training. These sessions will also be recorded and be made available for all on the Security website:
  
  ➢  [https://security.ias.edu/](https://security.ias.edu/)

- **File Locker.** Related to the best practices discussed in the seminars above, this coming year will see the roll-out of a system that allows for secure transfer of files to audiences both inside and outside the Institute. This new service is aimed at preventing the unintentional exposure of sensitive information through the use of insecure means of data transfer, such as email.

- **LastPass.** Another improvement to campus-wide information security is the wide-spread roll-out of LastPass, an enterprise password safe, to store important account credentials that are needed and shared by administrative workgroups throughout the administration. Computing will be working with each individual group to implement and train staff to better protect these critical assets.

Digital Scholarship at IAS

- **Albert.** The Institute’s new Open Access digital repository, Albert, will be available early this fall. The Albert system, a D-Space based repository, can be found online at:
  
  ➢  [http://albert.ias.edu/](http://albert.ias.edu/)

  In its first phase, Albert is initially aimed at providing access to the published works of the current full-time faculty and emeriti. Additional phases of the project will expand on these goals, and are outlined on the project’s website at:
  
  ➢  [https://www.ias.edu/campus/computing/albert/](https://www.ias.edu/campus/computing/albert/)

- **ORCID Membership.** This fall IAS will also become a member of the ORCID consortium ([http://orcid.org](http://orcid.org)). ORCID, through its ORCID ID, provides a persistent digital identifier that helps to identify researchers as they publish digital material and manuscripts. Through our participation in the consortium, we will be encouraging IAS scholars to sign-up for ORCID IDs, as well as developing an integration between the Albert repository and ORCID.
• **Digital Scholarship Conversations Series.** The Digital Scholarship Conversations seminar series will continue again this academic year. The schedule for this year’s talks can be found online, at:

  ➢ [https://www.ias.edu/digital-scholarship/events_ias/](https://www.ias.edu/digital-scholarship/events_ias/)

• **Squeeze Digitization.** Thanks to a generous donation, the effort to digitize the Institute’s collection of squeezes, discussed above, will commence this winter. The process will include creating high-resolution scans of the squeezes, which will be loaded into a collection in the Albert repository along with collected metadata. The effort to digitize the full collection is expected to last about three years.

• **Zaydi Manuscript Tradition.** Continued development on the ZMT project will include expansion of the manuscript collections, and the incorporation of new partnerships.

**Media Technology Services**

• **WH Audio.** The focus of this summer’s audio/visual upgrades will include making improvements to the audio system that supports Wolfensohn Hall. This work is expected to include a new soundboard and upgraded interoperability with the recording and streaming systems currently in use in the hall.

• **Simons/Rubenstein.** As noted above, A/V improvements are planned as part of both the Simons Hall and Rubenstein Commons projects. In Simons Hall, a new audio system is planned as part of the renovation of the “servery” area. This year will also see the design of the A/V program for Rubenstein Commons, which is expected to include presentation audio and video, videoconferencing endpoints, recording and streaming capability, and the relocation of the Institute’s Broadcast Center.

• **BH Lecture Hall.** The last area of focus for A/V upgrades this year will be the Bloomberg Hall Lecture Hall. This space will be equipped with a new lecture capture platform, similar to Simonyi Hall’s S-101, as well as improved audio and projection capabilities.

**Conclusion**

The projects identified above are not a complete listing of all the work that has or will take place, but rather an attempt to highlight the most meaningful areas on which we have focused this year and will be focused on in the coming months.

Thank you again for spending a few moments to familiarize yourself with the past activities and upcoming projects in Computing. If there are any areas that you feel should also receive attention that were not addressed by this listing, please reach out to a member of the Computing staff, and we will work with you to incorporate those ideas into this roadmap. All projects are identified and prioritized to help address Computing’s ultimate goal, ensuring that the Institute members, faculty and staff have the necessary information technology resources and services in order to complete their own work.
Computing Administration
Jeff Berliner
Chief Information Officer

Jim DeBeer
Telecomm Technician

Maria Mercedes Tuya
Software Support Specialist

Databases and Integration
Edna Wigderson
Manager, Databases and Integration

Chris McCafferty
Web Programmer

Media Technology Services
Dario Mastroianni
Sr. Media Technician

Samuel Venanzi
Media Technician

Network Administration
Brian Epstein
Computer Manager, Network and Security

Christina Klam
Network Engineer

Christopher Peterson
System Administrator

Marty Van Winkle
System Administrator

Information Technology Group
Jonathan Peele
Computer Manager

Dan Franciscus
Windows System Administrator

Kimberly Lebron-Tribbett
Computer Support Specialist

Michael Morris
Linux System Administrator

Mandeep Sidhu
Computer Support Specialist

Math Computing
Kevin Kelly
Computer Manager

Theresa Arzadon-Labajo
Senior System Administrator

SNS Computing
James Stephens
Computer Manager

Lee Colbert
Linux Systems Administrator/Software Support Specialist

Kathy Cooper
Linux System Administrator

Sarah Zantua-Torres
Windows Administrator