Proposal submitted to the Andrew W. Mellon Foundation

for the Organization and Deployment of Information Resources

at the American School of Classical Studies at Athens

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I. INTRODUCTION

In the 125 years since it was founded, the American School of Classical Studies at Athens has served as the pre-eminent American overseas center for teaching, advanced study, and research concerning the Greek world from pre-Hellenic times to the present. It has given generations of students and scholars the unique opportunity to expand their knowledge of the Greek world using all Greece—and beyond—as a classroom, immeasurably enriching their teaching and their scholarship.

Through its teaching and research facilities, including the Blegen and Gennadius Libraries, the Wiener Laboratory, and through its excavations in the Athenian Agora and at Ancient Corinth, the School has facilitated and promoted research in the humanities. Through its Publications program, the School has relayed the cultural resources under its management to the scholarly community and beyond.

The world served by the School has changed profoundly, perhaps never more so than in the past few decades:

- The field of classical studies has broadened to include a wide range of approaches, subject areas, periods, and regions.
- The practice of archaeology has been transformed by the incorporation of new methodologies and a broad spectrum of disciplines, as well as increased responsibilities for preservation and access.
- Curriculum demands, financial pressures, and the job market have altered priorities for graduate students and senior scholars alike.
- Digital technologies have transformed the organization and transmission of information.

The School faces unprecedented challenges as it negotiates its way in the 21st century. To meet these challenges and to better serve its constituencies, the School is launching a multi-year campaign to build for the future.

II. BACKGROUND: MANAGING THE SCHOOL'S INFORMATION RESOURCES

The incorporation of digital technologies in the world of scholarly communication has already had a profound effect on the way educational institutions achieve their missions, and the effect on the School is no less. New technologies have altered, and will alter even more, the ways in which the School carries out its own mission, whether at the level of recording primary information at its excavations, or organizing it for research purposes, or publishing it. Furthermore, the organization and operation of its research libraries and related collections will have to be restructured to support the new research models mandated by the use of digital technologies.

In its 125 years of existence, the School has amassed a rich and varied primary and secondary collection of information in all formats—at its excavations and archaeological laboratory, in its libraries and archives, and in its publications and administrative offices, through a decentralized model of collection development and management. Through its continuing excavations, laboratory work, and library and archival acquisitions, the School continues to amass primary and secondary information.

Over the years, each area has gone its own direction in organizing and providing access to these resources. With the School's rapid growth in the 1990s and early in the new millennium, concurrent with the rapid changes in technology, it became clear that it needed to address on an institution-wide basis the organization and management of its information resources. Beginning in 2002, aided by conversations with, and planning grants from, the Andrew W. Mellon Foundation, the School began to consider ways of designing and implementing strategies for more efficient and cost-effective information management.

In fall 2003, with funding provided by the Mellon Foundation, a Visiting Committee consisting of four specialists in libraries and information management traveled to Athens to spend a week with staff members. The goal was to review existing systems and explore ways in which the School could take advantage of new technologies and organizational models to improve information management and scholarly communications internally and externally. Issued in September 2003, the Visiting Committee's report made a wide-ranging series of recommendations covering staff organization as well as the use of new technologies in achieving a more effective model of scholarly communication and information flow.

In the 18 months following the report, there were several key staff departures that slowed progress on implementing the recommendations but, by spring 2005, the School had filled critical positions in the Publications Office, the Blegen Library, and the Gennadius Library. With the presence of these newly-hired staff members, who had the requisite skills and interest to move forward, and thanks to a firm commitment on the part of existing staff members as well as the Chair of the Managing Committee, Professor Rhys Townsend, the Director of the School, Professor Stephen V. Tracy, and the Executive Vice President, Catherine Vanderpool, the School was in a good position to address the issues raised in the Visiting Committee's report, and to undertake a more integrated approach to managing its information assets.

Again with the assistance of the Mellon Foundation, the School invited Susan Perry, Special Advisor to the Foundation and head of the 2003 Visiting Committee, and Beth Warner, Assistant Vice Provost for Information Services (Strategic Initiatives), the University of Kansas, to meet in Athens with School leadership from the United States and Greece over a period of six days, from November 9–14, 2005. Ms. Warner would focus primarily on technical infrastructure and Ms. Perry on organizational and management issues, with the overall goal of helping the School move to the next stage in creating more coherent and integrated information systems and organizational structures. These would support research, teaching, and scholarly communication both within the School and for dissemination to the larger world.

Following on the Athens meetings, Ms. Warner and Ms. Perry noted a number of changes since the 2003 report. First of all, the new leaders in both libraries—Director of the Gennadeion, Maria Georgopoulou and Head of the Blegen Library, Charles Jones—are committed to a closer collaboration between the Blegen and the Gennadeion, while the new Director of Publications, Charles Watkinson, knowledgeable in the area of electronic publications as well as other technologies for electronic dissemination, is willing and able to play a key role institution-wide. Another major step has been the implementation of "Ambrosia," the online library catalogue based on Ex Libris' ALEPH system and shared among the Blegen, the Gennadeion, and the British School of Archaeology. The School has also improved its networking capabilities, added wireless network access, and upgraded computing equipment. Ms. Warner and Ms. Perry also noted that significant work has been done at the School's excavations in Corinth and, above all, the Athenian Agora to develop systems for data management and dissemination on-line.

Ms. Perry and Ms. Warner also drew up a series of recommendations and actions:

- Reconceptualize the organizational framework into groups that include information gatherers (the Agora, Corinth, Lab, researchers); information managers (Libraries, Archives, technology department); information disseminators (academic program, Publications, and other externally-directed programs such as exhibits);
- Design a flexible information and systems architecture framework;
- Establish a solid information services infrastructure, centering on the development of a collection of common systems and services that facilitate reliable storage, organization, and access of digital objects;
- Populate system with resources that address the needs of the user community. Resources should be added in such a way that they will address long-term access requirements as well as immediate needs through the consistent use of standard formats and adequate storage and backup facilities;
- Overlying the technical infrastructure, build applications and user spaces to provide access to the resources provided, including providing a variety of access and analysis tools, specialized interfaces, and general access as well as personalized spaces;
- Put in place well-defined policies and standards to provide a consistent, coherent environment for users to work within while allowing room for experimentation and research to take place.

To implement, Ms. Perry and Ms. Warner outlined the following critical next steps:

- Provide more staff and financial support for IT to support programming, web development, development of a digital asset management and preservation plan, networking, and equipment maintenance and upgrades;
- Investigate remote hosting options for the majority of the servers currently housed at the School in Athens;
- Develop a systematic equipment replacement plan and a revolving fund to support upgrades to desktop computers, servers, and network equipment;
- Provide a dedicated fund for Corinth that will allow them to bring their electronic digital asset plan and systems into alignment with the Agora. This will require staff and equipment;
- Develop and implement a more robust process for data backups, including a disaster avoidance/data recovery plan for the School, including the excavation site systems;
- As the Agora and Corinth sites collaborate more on technical issues, and systems development matures, consider more formally splitting out production from development sites;
- Redesign the School's website;
- Develop a more coordinated service model across the two Libraries; a collection analysis should be conducted for both Libraries; merge the technical services areas in the two Libraries;
- Consider collaborating with the British, French, and German Schools for shared technical services and cooperative collection development;
- Develop a digital asset management and preservation model that addresses all digital resources for the School including the excavation sites, archives, and publications;
- Develop graduate and/or postdoctoral internships for the following areas: IT, Corinth, the Agora, the Libraries, the Archives, and the Wiener Lab.

Other items for consideration include:

- Continue development of local data resources (such as the newspaper clippings and student-generated site photos). Investigate ways of integrating access across files to continue to provide tools such as the Topographical Index virtually rather than as a distinct file;
- Investigate better methods, such as an institutional repository (IR) system, for self-deposit and self-description of field reports and photos. An IR system can also help provide a more stable environment for other ASCSA electronic resources including stable URLs and better management capabilities for resource migration;
- Develop and publicize more formal policies, best practices, and guidelines. Policy areas to consider include: access/rights management; server use; data backups; network use; digitization standards and priorities; cataloging priorities; equipment upgrades; data archiving and preservation; and records management;
- Develop better, more consistent documentation of existing locally developed systems and data formats;
- Investigate use of remote instrumentation capabilities for off-site users to remotely access materials at the Wiener Lab and excavation sites; investigate potential for NSF grant funding; potential joint project with British, German, and French Schools;
- Investigate on-line publications management systems for use at the Publications Office to track/manage publications workflow.
- Investigate internships and seminars to train staff; redeploy existing staff before creating new staff lines.

In a follow-up meeting at the Mellon Foundation on January 31, 2006, School leadership met with members of the Mellon Foundation to discuss next steps. In that conversation, and in succeeding discussions among School staff members, we have formulated a longer-term vision of where the School wants to be and how to get there.

III. GOALS

The School aims to establish a program of 21st century scholarly communication and digital asset management, making its information resources accessible internally and externally, within and without the scholarly community. In so doing, the School hopes to become a model for research institutions with an archaeological component in the organization, management, and dissemination of the primary materials in its excavations and archives. The systems it develops, properly documented, can be transmitted to other excavations and institutions with related missions.

In order to organize and to improve access to these resources, the School aims to implement an integrated program of digital asset management incorporating all its departments. Therefore, the School will need to develop a coordinated approach in:

- organizing existing digitized content;
- selecting materials for digitization;
- creating centralized access;
- creating systems for preservation and migration;
- ensuring sustainability;
- disseminating knowledge more widely.

The School plans to create a flexible and robust information architecture accessed through a powerful web space. The wide variety of formats in which the School's digital assets exist, and the complexity of links between them, require a flexible data architecture for which a variety of user interfaces are either available or can be developed. A strong commitment to open-source data standards is recognized as essential for permitting interoperability and ensuring archival integrity. Adoption of open source repository software would offer the School the opportunity to create new interfaces, especially where these are lacking, as they currently are for archaeological data presentation. At the same time, participation in a network of similar institutions would allow the School to adopt services and tools developed elsewhere, such as software for the submission of electronic dissertations or content-specific search utilities. It would also allow the School, in turn, to share the services and tools it develops.

In order to build a robust and enduring system of data management, the School recognizes the need for a staged process. The first stage is to create and strengthen the necessary infrastructure; the second focuses on consolidation, digitization, and further development. For Phase 1, which will take 18 months to complete, the School herewith is submitting a request of $290,550 to the Andrew W. Mellon Foundation. Phase 2 focuses on the consolidation of the new infrastructure, digitization of collections, and further development of dissemination tools and interfaces; funding is being, and will be, sought from a number of sources.

IV. PHASE 1: BUILDING THE INFRASTRUCTURE

The School will have to focus on two areas in particular in order to build the necessary infrastructure to realize its goals. The first deals with the organization of information management departments within the School and staff training. This component is discussed in Section A, below, *Organization and Staff Development.* The second area is set out in Section B, *Strengthening the Technological Infrastructure*, where we address the issue of the digital architecture that will organize and preserve the School's information assets, as well as the thin layer of web technology that will serve to give wider access to them.

To coordinate the project, and ensure that all stakeholders are consulted and involved, the School has created an Information Resources (IR) Workgroup. The co-chairs of the Workgroup are Charles Jones, Head of the Blegen Library, and Charles Watkinson, Director of Publications, and they are responsible for ensuring that the project activities are coordinated and completed on time and on budget. The Workgroup consists of department heads and other stakeholders, and reports to a Steering Committee currently consisting of Rhys Townsend, Chair of the Managing Committee, Stephen Tracy, Director of the School, and Catherine Vanderpool, Executive Vice President of the School. When Ms. Vanderpool leaves the School staff on June 30, she will continue on the Committee in her new role as President of the Gennadius Library Board. The School's new Administrative Director, Irene Romano, will also join the Steering Committee.

Through distributed responsibilities, the IR Workgroup is addressing issues connected with planning and implementation of the School's strategy for information management. Attached is an organizational chart (Attachment A) that sets out the key staff responsible for the implementation of the project as of June, 2006, along with a biographical note for each person (Attachment B). Three core teams, each drawing upon the expertise of external consultants, are shown reporting to the IR Workgroup. Although these are not closed groups, and will involve other members of staff as the project develops, the named members of each team will take responsibility for their part of the larger project and, at set points, will formally report on progress to the IR Workgroup and Steering Committee. A timeline (Attachment C) sets out the projected schedule for the project. It illustrates mutual dependencies between different activities.

A. Organization and Staff Development

For many scholars and graduate students, the School's single most important research asset is its library system, consisting of the Blegen and the Gennadius Libraries. Containing over 86,000 volumes as well as archives and electronic resources, the Blegen covers virtually the entire field of classical antiquity. The Gennadius Library covers the post-classical Greek world, and now holds over 112,000 volumes combining rare books as well as a research collection.

In addition to this combined total of nearly 200,000 books, both libraries contain important archives. The Blegen's Archives contain papers and photographs important to the story of American excavations in Greece beginning in the late 19th century; the Gennadeion's materials are important for the political history of early modern Greece and the Balkans. The Gennadeion Archives also hold the papers of significant Greek literary figures such as Nobel prize-winning poets George Seferis and Odysseas Elytis**.**

Over the years, the libraries and archives have worked independently of each other in acquiring, cataloguing, and, in general, managing their collections, developing separate roles and identities. The Blegen serves as the research library for Members of the School, freely accessible to them at all hours, and open to the local scholarly community during the day. All users have access to the stacks. The Gennadeion was established as a special collections library, with stacks closed to all but library staff. The libraries' catalogues were set up on different systems.

With the School's purchase in 2002 of ALEPH, an electronic library management system, the two libraries, along with the library at the British School in Athens, embarked on a collaborative project to create a single catalogue. Nearly complete, the catalogue is now live for users at the three main sites (Blegen, Gennadeion, and the British School) as well as offsite through online access. With the implementation of ALEPH, the School's libraries have made a significant step toward coordinating the management of their collections.

The catalogue and other advances in electronic-based research, plus the exponential increase in the numbers of computers at the School and in the expectations of American students and scholars visiting Athens, have put enormous pressure on the IT department in terms of programming, systems analysis, and troubleshooting both hardware and software. The School has concluded that it needs to create a Library and Information Services Unit drawing on stafff from its libraries, archives and IT departments. This new unit, when it is fully developed, will be directed by the Head of the Blegen Library, Chuck Jones. In order to create this unit, which will further the collaboration implicit in the electronic catalogue, streamline operations in the libraries, and strengthen the IT function, we have established the Coordinated Service Model Team for the grant period, comprising Maria Georgopoulou, Director of the Gennadius Library, Charles E. Jones, Head of the Blegen Library, and Natalia Vogeikoff-Brogan, the School's Archivist. This team will report to the co-chairs of the Information Resources Workgroup, who will be responsible for coordinating the project and making sure activities are completed on time and on budget.

In order to develop a Coordinated Service Model, the library leadership is examining such issues as:

1) Statutory and traditional obligations to various user communities.
   These include School Members, the 170 Cooperating Institutions in North America, other foreign institutions in Athens, other American institutions abroad (particularly the community of overseas research centers represented in the Council of American Overseas Research Centers), non member visitors from the Greek academic community, and the general public (the latter through on-line access).

2) Categories of holdings; roles and responsibilities inherent in the husbandry of each.
   These include rare books, general research collections, specialized collections in which these categories cross (e.g., the Gennadeion's collection of early travelers' accounts), scholarly and administrative archives, manuscripts, and other special collections.

3) Acquisitions policies of the Gennadius and Blegen Libraries.
   The School needs to formulate a joint acquisitions policy that takes into account the history of acquisitions, the use of the material as well as the issue of duplication.

4) Reconfiguration of physical space.
   It is necessary to decide which materials should be stored in which facility; which materials should be behind what level of security; access to stacks, a question under consideration in the Gennadeion, where until now stacks have been closed to all but staff.

5) Staffing and staff expertise.
   In addition to examining workflows throughout the library and archives operations, the School also aims to analyze, develop, and institutionalize support for a robust, reliable, and sustainable IT staff infrastructure. The proposed creation of a Library and Information Services Unit will examine restructuring in order to integrate technology-focused and information-focused services and processes. The current IT department is understaffed, with two full-time employees doing a wide variety of functions from systems design to hardware troubleshooting for Members and staff. A rigorous analysis of current staffing will be carried out in order to define the essential requirements to support a coordinated services model. A key aim is to strengthen IT functions through retraining and redeployment of staff within the Library and Information Services Unit rather than through new hires.

To facilitate the development and implementation of a Coordinated Service Model, the School proposes to hire two consultants in the areas of collections assessment, and technical and IT services workflow. The individuals are not yet identified but the School plans to work with Ms. Warner and Ms. Perry to identify suitable candidates. Although working with a range of staff, the consultants would report to the Coordinated Service Model team.

The responsibilities of the Collections Assessment Consultant will include:
1. Assisting the Blegen and Gennadius Librarians in the formulation and writing of concise collection development policies which minimize duplication between the libraries.
2. Assessing the current collections in the light of these policies and identifying strengths and weaknesses.
3. Analyzing the Gennadeion's closed-stack holdings and advising which materials should be separated into special collections and which could be placed on open shelves.
4. Advising on the preservation of special collection materials such as rare books, manuscripts, works of art, antiquities, and ephemera.
5. Establishing a process for ongoing collections assessment reviews.
6. Working with IR Workgroup and Steering Committee to implement recommendations.

The responsibilities of the Technical Services and IT Workflow Consultant will include:
1. Assessing the current workflow model for the processing of print and non-print orders in the Blegen and Gennadius Libraries.
2. Mapping revised workflows, based on this assessment.
3. Advising on job descriptions for staff in a Technical Services unit.
4. Assessing the School's IT staffing needs and advising on job descriptions for the needed positions.
5. Appraising the capabilities of existing staff for the roles identified and advising where retraining and/or new hires might be necessary.
6. Working with IR Workgroup and Steering Committee to implement recommendations.

Staff training and redeployment are integral to strengthening the School's technological infrastructure. Certainly consultants can, and will, be sent from the U.S. to Greece to advise in certain areas. Further, there are seminars and programs available in Athens and elsewhere in the European Union that will be useful at various levels. The School, however, is an American institution, and its primary constituency comes from U.S.-based institutions of higher education. Therefore, it is essential for key staff to have that kind of exposure to best practices and networks that can only come from traveling to, and participating in, programs in the U.S. Prompted by Ms. Perry's and Ms. Warner's recommendations, the IR Workgroup has identified strong, U.S.-based internships and special training seminars that address what the Workgroup decided were areas of immediate need. Further, and ongoing, training needs will be identified in the process of restructuring the libraries and IT departments.

After consideration of several possibilities, we believe that the University of Virginia offers a number of interesting opportunities. In addition to its leading roles in the application of digital technologies to the humanities, in publishing, and in the care and handling of special collections, the University has long had a strong presence in the world of classical studies and archaeology, with, currently, two active members on the School's Managing Committee, Professors Jon Mikalson and Elizabeth Meyer. It is hoped that the involvement of Thornton Staples, Director of Digital Library Research and Development, University of Virginia Libraries, as digital architecture consultant for the School (discussed below) will further enhance this partnership.

2) *The School proposes to launch immediately a staff training program, and to incorporate training in future annual operating budgets.*

In discussing the recommendations made by Ms. Perry and Ms. Warner, the IR Workgroup have identified the following areas of immediate training need. It is recognized, however, that further training needs will be identified by the consultants working with the School in Phase 1.

Digital Publishing/Workflow Internship
With the aim of documenting best publishing workflow practice for implementation across the School community (from content creation to dissemination), a senior member of the Publications Office staff, Carol A. Stein, the Managing Editor, will be hosted for two weeks in November 2006 by the University of Virginia Press, a leader in electronic publishing for the humanities through its Rotunda electronic imprint. The internship will focus on the publishing workflow and the candidate will follow both print and digital publications from final submission to production, documenting the processes and technologies used. While the University of Virginia Press will not charge for hosting their School colleague, they have requested a contribution toward the costs of sending one of their staff members to the Association of American University Presses (AAUP) conference. The internship is seen by the Press as an opportunity to further an internal review of workflow they are conducting this year, and it is planned that the results of the ASCSA/UVP study will be jointly presented at the 2007 AAUP meeting.

Training in Electronic Records Management
The Archivist of the Blegen and the Gennadeion, Natalia Vogeikoff-Brogan, will attend the two-day workshop offered in May 2007 by the Society of American Archivists on Basic Electronic Records Management, which is geared toward academic repositories. Its primary aim is to identify institutional goals and objectives for the treatment of electronic records and to develop an overall action plan for such organizations. Since long-term preservation of digital records

presupposes their conversion into a standard and stable format (like XML), the Electronic Records Management Workshop goes hand-in-hand with the Encoded Archival Description (EAD) two-day workshop geared specifically toward archives. In addition to attending these two workshops, Dr. Vogeikoff-Brogan will supplement this new theory with some practical training at a college library. She is following up personal contacts including David Gracy, Professor at the School of Information, University of Texas at Austin (who has been invited by the Gennadius Library to give a talk in Athens in May), Patricia Galloway, who teaches Management of Electronic Records in the same department, and Jackie Dooley, Head of Special Collections and Archives at the University of California, Irvine. Ms. Dooley has acted as a consultant to the ASCSA Archives in 1995–1997 and has also been the special editor of two issues of the American Archivist focusing on EAD. The total time spent in the U.S. by the Archivist is expected to be two weeks.

Best Practices in the Digitization of Cultural Heritage Materials
Assistant Archivist, Maria Volterra, will take part in a two-week internship at a library involved in the digitization of materials including images and texts. This is to ensure that the School follows best-practice workflow standards for developing, managing, and distributing high-quality digital collections. The internship will include learning about metadata, digitization, and preservation. Two possible institutions with which the School has developed links during the planning process have been identified: KU Digital Initiatives at the University of Kansas Libraries, and Digital Library Production Services (DLPS) at the University of Virginia.

Training in Special Collections and Conservation
Digitization of text materials will require new skills in classifying special collection materials, conserving them during processing, and supplying appropriate metadata for their digitized surrogates. The Rare Book School (RBS), University of Virginia, is recognized as a leader in these areas and it is proposed that Irini Solomonidou, Associate Librarian at the Gennadius Library, take two intensive, two-week, courses offered in the summer of 2006: "Introduction to Special Collections Librarianship," taught by Alice Schreyer of the University of Chicago, July 17–21, and "The Book in the Manuscript Era," taught by Barbara A. Shailor, July 24–28. In addition, Ms. Solomonidou has been invited by the Director of the Dumbarton Oaks Library, Sheila Klos, to spend a week there as an intern at the library of Dumbarton Oaks.

Several shorter-term programs have also been identified as desirable immediately.

Electronic resources, journals, digital assets management for Gavriela Vasdeki, assistant at the Gennadius Library. Further training in ALEPH and other digital tools will refine her skills in ordering, cataloguing, and managing library electronic resources as well as cataloguing newly acquired digital files for the Library's collections.

Management of digital images for Katerina Papatheophani, assistant in the Gennadius Library photographic archives. Katerina needs to become acquainted with Adobe PhotoShop in order to process the increasing number of scanned and born-digital images being incorporated into the Gennadeion's collections.

Specialized computer applications training for Gennadeion secretary Maria Smali, and for Katerina Papatheophani in MS Access and other administrative software programs, for various uses but mainly for managing and unifying the library membership and mailing lists.

Distance learning, Diploma in Library and Information Studies at the University of Wales (Aberystwyth) for Maria Tourna, Assistant Librarian in the Blegen. Collections and records management, systems analysis, and information retrieval are core modules in this one year course in modern librarianship, which would start in September 2006. After completing the Diploma, it is hoped that Maria will choose to develop her skills toward acquiring the M.Sc., which requires a dissertation and one to two years further study. The estimate includes a contribution toward tuition costs, and travel and accommodation expenses for a compulsory three day, on-site workshop held in the UK.

B. Strengthening the Technological Infrastructure

1) Development of institution-wide information architecture

The School's information resources are spread throughout its facilities: at its excavations; in its archaeological laboratory; in the U.S.-based Publications and Administration Offices; and in the Blegen and Gennadius Libraries and Archives. These resources consist both of digital surrogates of photographs, drawings, archival materials, primary and secondary literature; and of born-digital content, especially from archaeological projects. To facilitate research and to promote new ways of using these materials, the School aims to create an institution-wide system that allows users, wherever they are in the world, easy access to all the electronic materials under its management. It is the aim of the project presented in this current proposal to design, by the end of Phase 1 in November 2007, a comprehensive information architecture for the School and to prepare a working prototype that is based on a representative subset of the archaeological, textual, and visual data. In preparation for Phase 2, the School will apply for further funding to implement institution-wide the use of this repository to manage all its information resources.

To achieve its goals, the School proposes to enlist as consultant Thornton Staples, currently Director of Digital Library Research and Development at the University of Virginia, who would work with the School's Information Architecture Team, consisting of Tarek Elemam, Informations Systems and Technology Manager; Bruce Hartzler, Information Specialist at the Agora Excavations; and James Herbst, Architect of the Excavations at Ancient Corinth. (See attached organizational chart, Attachment A.) Other School staff will participate as necessary. Mr. Staples is uniquely qualified for this job. He has experience with archaeological projects from his days as project director at the Institute for Advanced Technology in the Humanities at the University of Virginia, including designing a system that used SGML (the precursor to XML) to describe the ruins at Pompeii. He also has broad and deep experience in designing digital library architectures for a variety of content, in addition to being project director for the Fedora project, discussed further below. As shown in Attachment D, Mr. Staples has reached an agreement with the University of Virginia to reduce his commitment there to 80% time, making him available for this consultancy.

The challenges presented by the School's collections are unusual. While good models exist for the management and delivery of textual and visual materials, incorporating the archaeological data and seamlessly interweaving it with archival and library materials for the purposes of both management and dissemination present a more complex set of problems. Of course, digital library and repository projects exist in many North American and international institutions and, within the discipline of archaeology, most archaeological projects now use electronic databases to manage their discoveries. Indeed, in recent years a number of initiatives to build digital architecture "systems" for a range of archaeological contexts have also been developed but these are still at very experimental stages. These include large-scale North American projects with strong archaeological components such as ETANA (http://www.etana.org), an experiment in the electronic publication of ancient Near Eastern materials and partly funded by the Mellon Foundation, and OCHRE (the Online Cultural Heritage Research Environment, http://ochre.lib.uchicago.edu/) directed by David Schloen. As reported at the April 2006 Computer Applications and Quantitative Methods in Archaeology (CAA) conference held in Fargo, ND, there are at least ten more international projects concerned with the comparison of archaeological data across sites and cultures

Although there are commonalties with these systems, our research and discussions with colleagues involved in a number of these projects either as developers or users suggest that none of these is specifically applicable, as is, for the School's particular needs. Archaeological databases created for particular projects usually reflect the priorities of their creators, and while often good at managing data, they are poor at presenting it, yet publication and dissemination have been key parts of our mission for as long as the School has excavated. There are few archaeological sites that are as complex as Ancient Corinth and the Athenian Agora, or that have been excavated for so many years–Corinth since 1896, the Agora since 1931–amassing huge quantities of primary information. Further, few sites have had the benefit of almost continuous exploration by a single institution; and fewer still have the benefit of uniting in one site an entire scholarly corpus available alongside the objects themselves, in museum and storage spaces that are contiguous to the actual site of discovery.

In years past, the recording and publishing systems developed at the Agora and Corinth were considered models of responsible archaeological processes. But the advent of new ways of storing and managing data, and new methods of dissemination have put pressure on the School to adapt to, and adopt, new means of handling the information. In the past eight years, the Agora excavations have undertaken an intensive program of digitization and data management including massive retroconversion of records going back to the start of the excavations in 1931, thanks to funding from the Packard Humanities Institute. The computerized records have been put into a unified database, with object catalogues, coins, conservation records, photography, and architectural drawings all being scanned or entered by hand. In addition, new excavations are applying innovative computer technologies to the acquisition of data in the field. The systems at the Agora have already begun to take advantage of important technologies like XML and RDF to provide a more sophisticated organization of the data.

The excavations at Corinth have also made major progress toward designing an archaeological data management system, but without the significant resources required for retroconversion of the voluminous data accumulated since the dig opened in 1896. Currently the excavation collection comprises about 180,000 inventoried finds (including coins), over 80 tons of context pottery, about 1,000 notebooks, 6,000 architectural and field drawings, and more than 100,000 negative and positive film photographs.

In the late 1970s, the Corinth excavations began using electronic databases for managing archaeological data. From the mid-1980s to 2001 a DOS platform flat-file database was used in-house to create detailed lists and index cards. In 2002, these separate lists were converted into an MS Access relational database, and team members began production of electronic texts, such as notebook transcriptions, digital images, and GIS data. Although the Access database captures the current workflow fairly accurately, there are large lacunae in the information due to the absence from the database of nearly 100 years of excavations records requiring retroconversion, thus hampering even routine data searches. Since 1988, a team from the University of Pennsylvania Museum has also been compiling a topographical and architectural geodatabase for Greek and Roman Corinth and has produced a series of highly accurate drawings and plans for various periods linked to detailed interactive actual-state drawings and textual description of each monument, roadway, or building of the ancient city. When published, this database will be made available by the project director, Dr. David Gilman Romano, to be incorporated into the School's data architecture.

Since the beginning of fieldwork, the excavation processes at Ancient Corinth and the Athenian Agora have developed separately. There are a number of differences in the way archaeological information has been recorded at the two sites, and in the questions that have been asked of it. Corinth, for example, has always been studied in a more regional context made possible by the largely rural modern landscape that surrounds the ancient site. The Agora, in contrast, has been circumscribed by its position in the congested center of the modern city. Although sharing some common features, the electronic initiatives at the two sites have also proceeded largely in isolation.

With the help of Mr. Staples, the School aims to build a common information architecture that presents two sets of information, artifactual and conceptual, for the Agora and Corinth as significant digital collections on their own, as well as providing an infrastructure to which many other kinds of digital collections (from the School Archives, the Blegen and Gennadius Libraries, the Wiener Laboratory, and the Publications Office) can be related. In the case of buildings, for example, the challenge is to relate these to precise physical locations and time frames when there is evidence, while reflecting differing and/or changing opinions about their function and "identity." With the finds, as with architecture, the system needs to be able to tolerate changes in attribution over time, including changes in the definition of the find itself. In both cases, data about time and place provides a commonality that can be used to relate the two collections.

We have already begun to explore several systems for use as as a main repository, in particular D-Space, The Museum System (TMS), and Fedora. D-Space would be able to handle some of the collections of the Blegen and Gennadeion Archives, but its simplistic underlying data model and its lack of flexibility in defining relationships among content make it unsuitable for the general job of content management and delivery. TMS reproduces many of the same functions, with a pre-prepared, user-friendly interface and continuing technical support. While it could be a solution to the workflow for preparing the data, and has been presented to staff in both the U.S. and Greece by the software developer, it does not appear to be suitable for implementing the necessary architecture. Although it has been used successfully to display archaeological data, as demonstrated by the Giza Archives Project (http://www.gizapyramids.org), the types of links between artifactual and conceptual data remain limited to those relevant to the museum environments the system was originally designed for.

At this point, pending further study, the Flexible Extensible Digital Object Repository Architecture (Fedora) package appears to be the best solution. It is an open-source repository management system that provides a powerful and flexible data model capable of supporting new kinds of collections and disseminating them in a variety of ways. It is also the only open-source repository that can enforce very fine-grain policies for access control as well as support an elaborate web of formal, ontology-based relationships among content. While Fedora does not directly support specific workflows, it is a service-oriented architecture that is designed to allow applications to be built up from a variety of software modules.

An example of the application of Fedora to complex collections and institutional repositories lies with the Fez project, developed at the University of Queensland in Australia (see the Fedora tools page at http://www.fedora.info/tools/). The Fez project has developed a web-based client that supports institutional repository functionality. It provides all the functionality of D-Space and more, in a highly configurable system that leverages all of the power of Fedora. There is

also the DirIngest Service, part of the Fedora software base, that can be used to create elaborate ingest packages of hierarchically-related batches of data. Both of these could be used to relate existing workflows at the excavation sites to a central Fedora repository, as well as to create new workflows to do the same at all parts of the School.

This said, the Information Architecture Team will be studying the options much more closely in collaboration with Mr. Staples. The architecture should not be dependent on any one system, but rather designed so that it can meet the specific needs of the School as nearly as possible. Therefore, it is critical to the success of the design process that Mr. Staples works closely not only with members of the IA Team, but also with other key staff members. As a preliminary step, we invited Mr. Staples to Athens in mid-March 2006. Over a period of five days, he discussed a wide range of issues with members of the Agora and Corinth excavation staff as well as library and archives staff. Once the grant period is underway, we have agreed with Mr. Staples that he will return to Greece three more times for intensive workshops, in addition to the project tasks he will pursue from his U.S. base. His consultancy will operate in six-month phases, the workshop sessions setting rolling targets and reviewing progress.

The next trip to Greece would focus on a two-week workshop in Athens, scheduled for September 2006. The goal is to create the high-level architecture that can account for, and integrate appropriately, all of the digital data that the School collects in its libraries, archives, excavations, and other departments. Workshop 1 would begin with a review of methods in all parts of the institution, aiming to establish metadata and content standards for all types of data that are currently being created; plan how practice can be changed where necessary; and decide how to begin migrating and enhancing existing data where available.

Workshop 1 would also aim to create a plan for implementing a significant subset of excavation data from both the Agora and Corinth, along with a set of descriptive models. The Workshop would also take into consideration images and texts from the Archives of the School that can be related to the two sites. This phase of Workshop 1 would begin by choosing a testbed of data from each of the two sites, from a particular area of each site over a given range of time. A set of descriptive models for the conceptual view of each area would be designed. Excavation data for the area related to the testbed would be defined, to be extracted from the working databases and pages imaged from the relevant notebooks

The third phase of Workshop 1 would develop a high-level functional design for how the testbed data could be delivered to end users. This work would provide a first test of the architecture developed in the first two phases, to ensure that the design could deliver the desired experiences while being well-managed. It would also provide the information needed by the web designers to design templates for the delivery of dynamically created web pages. As shown in the attached project timeline, Workshop 1 will coincide with a visit to Athens by the website development consultants.

Two more one-week workshops would be conducted in Athens at key points in the process to continue working out details and to design and implement a working repository that demonstrates integrated management and delivery of the chosen data. In the roughly six months after Workshop 1, data for the testbed would be extracted and/or created. Workshop 2, scheduled for April 2007, would be used to review the testbed data, and other data practices at the School, and to determine the process needed to move the data into the repository and deliver

it as desired. Workshop 3, scheduled for November 2007, would review progress towards the implementation of the prototype and make any necessary changes. Workshop 3 would also develop a plan for moving the prototype into production, defining the infrastructure that would be required, developing a strategy for acquiring the necessary resources, and making the first steps toward implementation, including fundraising.

Mr. Staples has estimated that his total time commitment will be 62 days over the 18-month period covered by this proposal, from June, 2006 to November, 2007, and has arranged with his home institution to release him for the purpose of this project (see attached letter, Attachment D). Between meetings, Mr. Staples would consult remotely from the U.S., while members of the Information Architecture Development team in Athens, in particular Agora Information Specialist Bruce Hartzler, would carry out most of the work of the project, with some outside programming support. Because Mr. Hartzler is currently working for the Agora on a project funded by another foundation, we will have to buy out his time, estimated at one day a week for the grant period, or a total of 72 days. His total salary and benefits per day are $225, for a total of $16,200 for the grant period. Further, Mr. Staples estimates he will need an additional 250 hours of programming support.

The construction of a powerful, flexible information architecture would benefit the School and the wider scholarly community in multiple ways. Not only would this technological infrastructure lay the foundation for a well-managed, integrated digital collection benefiting all departments, but also it would give the School the possibility of reassessing the data production at the two excavations to create more sustainable, more scalable, shared information workflows. This process could be extended to other departments of the School. The new systems would also afford the School the opportunity of developing new approaches to digital scholarly publishing in archaeology. Finally, once the system is developed and "test-run" at the School, it could become available to similar, archaeologically oriented projects and research institutions.

2) Dissemination of information: website development

The School's current website is a home-grown product that is no longer viable. It is unprofessional in appearance and difficult to navigate both for users and for those supplying information. To achieve its goals, the School needs to redesign its website as its primary communication tool, a task that requires the involvement of a web design and development firm experienced in the needs of educational institutions. Following on suggestions from Ms. Perry and other colleagues at similar institutions to the School, we have contacted a number of firms, one of which, mStoner (http://www.mstoner.com) has emerged as the best candidate for our needs. Primary responsibility for instructing and monitoring the consultant will fall to the Website Development Team, consisting of Tarek Elemam, Information Systems and Technology Manager; Irene Bald Romano, Administrative Director; and Charles Watkinson, Director of Publications, although many other staff will also be involved.

The website will have three main functions:

1. To increase awareness of the School among the scholarly community and the wider public. Users are expected to include such groups as potential students interested in joining educational programs, benefactors looking to further the School's mission, and specialists in other disciplines interested in Greek history and culture.

2. To deliver information under the School's management more efficiently. This involves providing access to the library catalogue, publications, and the growing repository of electronic resources.
3. To better integrate internal operations, promoting coordination between departments and across the Atlantic.

Because user involvement in the design of the website is essential, detailed specifications have not yet been written. This will be the first task of the web-design firm: to guide us in a rigorous planning process that also involves a clear development schedule with mutually-agreed "sign-offs." The planning process will acknowledge the various internal and external audiences for the site, and will design the appropriate paths and interfaces for each. On-site consultation with staff in Athens and the U.S., and liaison with the Information Architecture Team, will take place in September and October 2006. Survey tools will also be used to gather design feedback from a wider constituency including the School's Managing Committee. Decisions made during this planning process will include the types of content to be gathered, the software tools (calendars, e-commerce engines, etc.) required, the "look and feel" of the site, and the template specifications needed by the Information Architecture Team for displaying specific types of content (such as pottery catalogues). By the end of December 2006 the web developer will have presented a detailed proposal for implementation, including wire frame models of the site's structure and instructions on the types of content which the Website Development Team will need to develop.

Implementation of the website development plan will take place in February–April 2007. During this time the second meeting of the Information Architecture Team will take place, and the Team will instruct the web developers on any template alteration required by the evolving digital repository. After an exhaustive testing phase, the site will be launched in May 2007. Because the website will be based on a database-driven content management system, this will allow easy updating of information by many different School staff. The ultimate responsibility for assuring the quality of the web interface will lie with the Publications Office, but the use of automatic approval tools will allow the content on the site to be easily updatable by many different members of the School community. Since features will include a calendar of events in Athens, announcements of fellowship deadlines, and news, the involvement of many content creators will keep the site fresh, while also spreading the workload necessary to sustain the site. A maintenance contract with the web developer will be a continuing cost and there are other continuing staffing and financial needs which will be clarified during Phase 1.

3) Equipment needs to strengthen and stabilize internal network and server environment; equipment needs at Corinth

Since 2002, the School has operated a centralized IT budgeting regime and rotates IT hardware between its various departments. However, there are some extraordinary capital IT expenditures that have been identified as necessary for the development of the digital architecture and website, and these are described below:

a) There are several areas that have been identified as key to the smooth functioning of the IT systems institution-wide. First; it is essential that the School create a 1.5 Mbit (minimum) connection between each department and the general Internet. Since departments are separated by significant geographical distance, good external networking infrastructure is even more

important. Second; in tandem with the redesign of the website, it is necessary to upgrade the existing network infrastructure to resolve some long-standing security concerns and provide up-to-standard networking.

b) Of all the departments of the School, the Corinth excavations have the most pressing need for investment in both infrastructure and data management. The needs for data management have been set out above. However, in order to participate in the project outlined above, and in order to keep up even with the current workflow, Corinth needs an immediate infusion of new equipment. The Corinth excavation currently has four low-priced laptops for data entry and a rudimentary network cobbled together from secondhand equipment donated by the School's main campus in Athens. This computer/network combination runs the MS Access database slowly, often with errors that lead to data integrity problems. The four student laptops should be replaced with mid-ranged models, at the minimum. The three desktop computers should be replaced with newer models, and the entire network needs to be upgraded to an expandable server with a capacity to run the database well and space to effectively archive the growing number of digital images. The museum network should be hardwired to the dig house network using a conduit recently laid by the Greek Archaeological Service.

V. NEXT STEPS: CONSOLIDATION, DIGITIZATION, DEVELOPMENT

By the completion of Phase 1, the School will have identified the staffing and financial requirements for sustaining and developing the expanded and modernized infrastructure described in this application. To meet the challenge of implementing the digital architecture prototype, and in other areas such as website maintenance, the School recognizes that it will have incurred continuing expenses in terms of equipment and staff. However, through the development of a Coordinated Service Model for the libraries and IT department, the School will have a much clearer idea of the true costs. There will, in particular, be an understanding of where new positions need to be created, and whether these can be filled by existing staff. Indeed, the Chair of the School's Managing Committee has recently called on the School leadership to review staffing needs throughout the institution, and this review will also feed into the decisions being made at the end of Phase 1.

While potential new sources of income, from activities such as image licensing or online sale of publications, will be explored during the development of the digital infrastructure, it is recognized that these are unlikely to be substantial. There will also be some savings made as a result of restructuring. However, the majority of the costs for the consolidation of the new infrastructure will need to be covered by fundraising, both project-oriented and endowment, and it is expected that the School will seek this funding from a number of sources, including foundations, public sources, and individuals in the United States and in Europe.

With the establishment of a robust technological infrastructure, the School will also be able to turn more methodically to the creation of content, a major target for fundraising activity. For some years now, various School departments have been working on digitizing portions of their collections, as set out elsewhere in this proposal. In the future, the School plans to extend these activities, with top priority given to retroconversion of the collections at Corinth

In the context of content creation, the School recently decided to take advantage of a call for proposals within the framework of the European Union's digital initiative for preserving the European cultural heritage. Keeping in mind the limitations of its current systems, the School submitted a proposal that would follow well-established best practices in the digitization of a large body of photographic and image archives located in the Gennadius Library, the Blegen Library, and the Corinth excavations, and would also begin addressing the issues of preserving the oldest of the Corinth excavation notebooks.

During his visit to Athens in March 2006, Thornton Staples advised on the drafting of the EU proposal. In his opinion, this opportunity did not conflict with the School's application to the Mellon Foundation since the EU initiative was concerned with data capture while the current application focuses on the development of data architecture. With Mr. Staples' advice, the School was careful to dovetail its proposal to the Mellon Foundation with that to the European Union so that neither one duplicates, nor is dependent on, the other. According to the EU grant guidelines, the amount of equipment that the School can actually purchase from the EU funds is limited. For example, Corinth is allowed to purchase scanners with the EU funds, but not servers and general computer equipment. Further, the EU grant does nothing for staff development. The School must hire outside teams for the digitization, following a tender process if the amount is over a certain figure. In addition, the EU grant would not cover the costs of hiring special

consultants in collections, IT, or information architecture, nor would it pay for the development of the School's website. Although the IR Workgroup would have strategic oversight of the EU grant, the operational aspects would be performed by outside contractors, with coordination and quality-control the responsibility of an external consultant experienced in the management of high quality digitization projects. The management of the EU project, if the application is successful, would not interfere with the School's commitment of staff time to the proposed Mellon grant. The decision concerning the grant will be announced by the Greek Ministry of Culture late in the spring, and the grant period would begin in June.

The establishment of an integrated digital asset management program at the School will facilitate the accomplishment of its mission in ways that we are just beginning to appreciate. Through making existing materials readily available, and through allowing more creative links and interactions among information resources of all kinds, the School will be able to further the work of the research and teaching community—senior scholars and graduate students alike—as well as a constituency beyond the academy.