AMEEL

creating an

Arabic and Middle Eastern
Electronic Library

A Partnership Proposal to TICFIA
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Abstract: An Arabic and Middle Eastern Electronic Library (AMEEL)

Middle Eastern library content, particularly Arabic and other non-Roman language materials, poses special challenges to the creation of digital libraries. AMEEL seeks to lay the foundations for future progress and to build a working library by a twofold strategy:

1. To create a prototype Web-based portal for study of the Middle East, including its history, culture, development, and contemporary face, and to integrate existing scholarly digital content with this portal to make such material easier to find and use efficiently and freely.

2. To develop an environment for creating new digital resources, as well as integrating existing resources into a common structure. We will also tackle in particular the challenges of digitization and the opportunities for technologically assisted interlibrary borrowing and lending.

Project AMEEL will move rapidly on the underlying structural and integration component of the project, create a resource useful in its own right in the near future, and establish an architecture and standards for all who wish to participate in the common project, thus enabling others to see the benefit and to add their resources and energy.

The first stage of AMEEL will establish an 'integration infrastructure', both to create a useful resource rapidly and to put in place an architecture for future development. AMEEL will then work with partners to develop international standards for digitization of Arabic-language materials and to support would-be providers of digital information in Arabic. Finally, AMEEL will conduct a pilot Interlibrary Loan project with a small number of libraries in the U.S., Europe, and particularly the Middle East to prove the viability of the physical exchange of materials or technically facilitated
representations of those materials (faxes, photocopies, photographs) where digitization has not yet occurred.

A successful project will offer both a working library for U.S. and international information seekers and at the same time will make a major contribution by encouraging multiple projects that create new resources or integrate existing ones into the architecture we develop.

Project Narrative - 1. Meeting the Purpose of the Authorizing Statute
1.1. Introduction. What is Project AMEEL? In Project AMEEL, Yale University Library, leading a partnership of committed international collaborators, will design and construct a digital library that focuses on the Middle East (ME). We will begin this online library by creating a front end or "portal," into which we will integrate a significant portion of currently available ME electronic resources, including bibliographic records, selected abstracts, full text, and other formats in the Roman and particularly non-Roman, vernacular scripts. In order to sustain the effort over time, we will design a scalable methodology for adding newly created digital materials from and about the ME region, originating from a variety of participants including libraries, publishers, and commercial sources.

This project builds upon and will make frequent reference to OACIS (Online Access to Consolidated Information about Serials) that created an online union list of serials held in U.S., European, and ME libraries and covering ME subjects. That project was also led out of the Yale University Library and funded by TICFIA.

To create AMEEL – with the objective of enhancing resources available for U.S. scholarly study and research – we will draw from international (US, European and Middle Eastern) expertise of academic and information technology specialists to produce a gateway to knowledge that is more than a collection of links and a search engine and that is structured in a way that will let it grow with addition of new resources while retaining its power to organize and
assist the reader's investigations. In addition, we will bring deep expertise in handling technical challenges related to non-Western languages such as Arabic into the U.S. university arena. As a result of our partnered effort, (1) information creators in U.S. institutions will become proficient in Arabic text digitization and character recognition, qualified to lead digitization, preservation, and document delivery efforts, while (2) establishing a digital library from which students and scholars may gain more comprehensive knowledge about the ME. In short, we plan to create mechanisms, skills, and information resources to be shared widely with others, in academe and beyond.

Our digital library will go beyond providing a proprietary subset of information with *ad hoc* interfaces that have, however broadly they "cover" the subject matter, an ultimately narrowing effect for the way they limit the reader to the horizons of the provider's resources. Academic research librarians and area specialists already build subject-based Web pages arranged by discipline, embracing in turn other lists of sites. While these are excellent beginnings, the true value-adding power of a library (i.e., selection, analysis, integration, standardization of forms of access as far as possible) is imperfectly realized in such a setting.

1.2 The Concept: Layering Content and Services onto Bibliographical Records. Our plan begins with bibliographical records, which exist largely because they were developed in an earlier project. To these we will add full text content, followed by services for users. The content will be provided through digitizing efforts of the AMEEL partners, as well as from partners who are among the leading full text content providers of ME scholarly materials. For example, early exploratory discussions with producers of fully digitized scholarly resources in and about the ME have been conducted with publishers such as MultiData Online (Beirut), Brill Academic (The Netherlands), Oxford University Press (UK), and others who have agreed to work with and support AMEEL. These conversations, along with the growing coherence and consistency of the field's self-understanding and its dependence on information resources, have further encouraged us to believe that the time is ripe to create an appropriate test bed to support a robust, rich, and
well-structured "portal" to digital information across the whole discipline, arranged in ways that make it a genuine digital library for students, scholars, and information seekers at every level.

What important work will project AMEEL do to create a great digital library service? A partnership, including carefully selected, distinguished libraries and research institutions in U.S., Europe, and the ME, along with, initially, at least some of the providers of digital information that have flourished in the last decade, will work together to build a genuinely functional ME digital library. The form of this library will be a globally available Web site that will welcome students and scholars and provide a road map to resources – for example, a "catalog" or a "reference shelf." This aggregation of resources will include traditional print materials in abundance, along with innovative digital materials working together under a seamless interface.

1.3 Process. The work to create such a portal will fall into the following main categories:

A. The AMEEL partnership is being formed to give shape and supervision to this project and to assure intellectual coherence, identification of content, and appropriate service goals. A core of intellectual work will debate, define, and refine the conception of the project's range of coverage. While an ongoing, international advisory body, comprising the core partners, will have ultimate "board of directors" authority over the presentation and organization of the project, a larger group of librarians and scholars will be called upon for guidance on specific or special areas of endeavor.

B. Project AMEEL will design and build a common interface and linking system. AMEEL will have initially a single "front door" to lead the user to resources of multiple kinds. The front door will initially link to such full-text resources as are now available, including library catalogs. As work progresses, the access afforded those who enter the front door will become greater and the tools more powerful. The team here will need strong subject expertise, strong library and cataloging expertise, and first-rate Web-design and Web-building skills. Merely to get beyond the current
"lists of links" that librarians and others create and move to a resource that is more systematic, consistent, and reliable will be a huge advance.

C. Close cooperation with the primary providers (publishers, aggregators) of relevant resources will be essential, in order for their resources to be included in the overarching system of the portal we envision. We will work with such providers to analyze how their resources are structured and to "map" a common standard, as well as to air and resolve the technical, access, business, rights, and related issues that arise in the case of publications that are provided on a for-fee basis.

The component of Project AMEEL that integrates distributed resources will be adaptable and extensible as new ME e-projects emerge and are chosen for the portal. After establishing a technical coordinating subcommittee that will make fundamental choices about data architecture and protocols, we will proceed to identify 2-4 initial, significant full text projects, to be linked and made accessible and interoperable. This segment of the enterprise will require the most sophisticated technological work and will form a basis and proof of concept for later resource integration.

D. Likewise, our plans for digitizing selected resources will require the input of other experts such as ME scholars or leaders of other projects that have developed methodologies and priority lists for digitizing periodicals and/or other sources. See, for example, the work of the CAORC\textsuperscript{2} in its IMLS-funded Middle East Research Journal project, MERJ.\textsuperscript{3} CAORC is a collaborator with AMEEL. We also plan to collaborate in the creation of new digital works under this project.

E. AMEEL will create a culture of sharing materials with and from the ME that are not at present digitally available, through Interlibrary Loan protocols and their technological supporting mechanisms. As well, some of this work will result in the creation of digital surrogates that can be included in AMEEL.
F. Once we can measure the size, shape, and feasibility of AMEEL, we will address policy questions related to access and equity of access. Traditional library management has made resources available to individuals based on their affiliation with specific local institutions. This has tended to make the most sophisticated resources available only to members of the wealthiest institutions. Limitations of access pose a serious disadvantage for young scholars whose first jobs take them away from leading research institutions and also make it hard to overcome the gap separating practicing academic scholars from their colleagues working in other kinds of institutions (such as government agencies and businesses) and in many other countries. The list of resources whose use deserves to be broadened needs to be enlarged; fortunately, the price to institutions of ME resources is tiny by comparison to scientific fields. We cannot resolve all questions of policy and access, but discussions of this nature will play an important role in our work with our international and publishing partners.

The goal of Project AMEEL is in the end simple: to make it possible for the information seeker to identify the most appropriate books, articles, or data files that will support his or her studies and research, then gain access to those resources in the most efficient way possible. The key measure of success, some of it beyond the lifetime of this particular project, will be the quality and richness of the scholarship published by users of these resources and the progress of students and others who use AMEEL's resources in support of their activities.

1.4 Goals of Project AMEEL Related to Goals of TICFIA. The TICFIA legislation (Title VI, Section 606) awards grants to "institutions of higher education, public or nonprofit private libraries, or consortia of such institutions or libraries, to develop innovative techniques or programs using new electronic technologies to collect, organize, and preserve, and widely disseminate information on world regions and countries other than the United States, that address our
Nation's teaching and research needs in international education and foreign languages." Project AMEEL will achieve numerous goals, not limited to those sought by the Title VI/Section 606 grant requirements. We address here the goals identified in the Title VI Request for Proposals:

**Goal 1: To facilitate access to or preserving foreign information resources in print or electronic forms:**

The integration component of Project AMEEL will facilitate access to materials in or about the ME by building an Internet portal to the evolving contents and infrastructure of the proposed ME electronic library. We will begin by integrating a number of international sources including bibliographical records, tables of contents (e.g., our German library partners have developed TOCs for over 200 ME journals), and full text. In the digitizing component, we will provide access to foreign information resources by OCR-scanning them and making them available via the Web. All this work will be done using emerging standards for creation, description (metadata), and retrieval; in standard formats, portable into the future; and underpinned by open source, accessible technology components. Finally, Interlibrary Loan (ILL) classically facilitates access to information resources. Our project plans to establish ILL practices in countries where there has been little or no such tradition. It has not been possible for U.S. libraries to "borrow" materials held only in the ME. New technologies enabling the provision to the U.S. of faxed or digital copies of extant print information resources will fulfill this goal.

**Goal 2: To develop new means of immediate, full-text document delivery for information and scholarship from abroad:**

The integration component of AMEEL will build rich, easily navigable gateways and directories within an expandable, scalable digital library that coordinates existing content and makes it possible to add new materials in text and other media for delivery via the Internet or in acceptable facsimile. The digitization portion will achieve this goal by
providing access to hundreds of volumes of electronic full text integrated into a large union catalog of Middle Eastern Serials (OACIS). ILL within AMEEL will also contribute to this goal, through developing new ILL practice within the ME region, thus exploring unique new ways of delivering full text information to the U.S. as well as the Middle Eastern countries that participate in AMEEL-ILL. The universe of titles to be available for ILL includes the 14,000 unique serial titles in the OACIS database.

**Goal 3: To develop new means of shared electronic access to international data:**

Project AMEEL will exploit communications protocols such as file transfer and Z39.50 to deliver to readers access to information about the ME. The digitizing and ILL portions of AMEEL will demonstrate intriguing new ways of enabling electronic access to international content. Where copyright issues are not in question, digitized ILL materials will be available and useful long after an original ILL request has been filled. Where copyright restricts access, AMEEL, in collaboration with its publisher partners, will experiment to provide ILL documents digitally to scholars for short-term use.

**Goal 4: To support collaborative projects of indexing, cataloging, and other means of bibliographic access for scholars to important research materials published or distributed outside the United States:**

AMEEL will build the contents of its digital library to facilitate access by merging into one unified resource bibliographic data, holdings, and content from materials presently contained in separate systems, databases, and electronic catalogs. So with a publishing partner (Brill) we will widen access to key indexing services such as the *Index Islamicus*. AMEEL will encourage those institutions joining the digitization and ILL portions of the project to include their catalogs of serials in the OACIS union list for the ME. The ILL component also touches on this goal: AMEEL will be exploring means of providing joint searches of libraries' own catalogs for monographic materials. The development of cross-
searching capabilities will provide new bibliographic access for scholars to the
information seekers in the AMEEL-ILL countries.

Goal 5: To develop methods for the wide dissemination of resources written in non-Roman
language alphabets:

By implementing current and developing technologies for text encoding (e.g., Unicode) and metadata, AMEEL's portal will be able to display and disseminate materials in non-Western scripts, especially in Arabic. This capability will support the many readers who do not have special language capabilities on their computers. With our highly advanced digitizing partner (Bibliotheca Alexandrina), the world leader in Arabic OCR scanning, we will collaborate to develop and advance standards for digitization and optical character recognition of Arabic language materials. Together, we will train librarians and educators in scanning Arabic documents. The connection between ILL and the digitization project will mean that non-Roman language materials without copyright constraints will be available via the Web.

Goal 6: To assist teachers of less commonly taught languages in acquiring, via electronic and other means, materials suitable for classroom use:

The project will open up a wealth of materials suitable for classroom and research project use. Using AMEEL, academics in U.S. ME departments will gain broad, easy access to materials that can enhance the learning experience in their classrooms; they may, for example, access language recordings (such as those created in the Yale University Center for Language Study) otherwise unavailable to students and display full content of newspaper and journal articles and images from hard to find texts. Teachers and scholars will be able to view materials and use them freely for classes and instruction. Through the newly developed ILL capability, teachers will be able to request documents from
partner AMEEL-ILL libraries, particularly in the ME. Those who create resources for teaching about the ME will be able easily to link them to the AMEEL portal.

**Goal 7: To promote collaborative technology based projects in foreign languages, area studies, and international studies among grant recipients under this title.**

Collaboration is at the heart of the technology effort of Project AMEEL. We will draw from international information technology expertise in managing non-Western vernacular languages, especially Arabic, and will employ open source solutions in software development. Developing a collaborative portal for scholarly materials from the ME will ensure that we connect with and incorporate existing or developing projects in foreign language, and area and international studies. AMEEL will also offer visibility for new ME Web projects. We have already conferred with recipients not only of Title VI-TICFIA grants, but also IMLS, NEH, and others (such as the NSF's Million Books Project) either to plan specific ME efforts or to share information about cutting edge technological developments and techniques that can be effectively deployed across world languages and regions.

**Project Narrative - 2. Extent of Need for the Project**

2.1 Why construct such a library? Increasingly, the academic community needs and demands coordinated access to general or specific content, across formats, media, and sources. ME studies lag behind other scholarly areas in the creation of a digital library that responds to these needs. While there is a proliferation today of dependable and robust academic information sites regarding the ME, these sites often exist on their own as custom products of a particular institution. Nothing pulls them together for ease of use. In many cases, links provide only first level results by identifying an item and possibly its location, but without providing full content or an access path to it. Furthermore, the user normally needs prior knowledge of available resources
and then has to search these individually to find desired information. Finally, it is hard in such an environment to identify the gaps – to know what is missing.

2.2 Integration: Organized gateways to information and materials about or in the ME do exist in some quantity, yet they are often of a commercial nature or related to daily needs, such as real estate agents in Abu Dhabi or charter travel to ME countries. The integration portion of Project AMEEL intends to construct a truly comprehensive scholarly library that focuses on the ME. This will lead to greater visibility for specific projects, greater potential for communication, greater coordination, and more elimination of duplication of effort. The digital library will reach a broader range of readers and users, particularly important in reaching a new generation of readers needing to be well informed about ME affairs.

Developing AMEEL creates significant opportunities. First, because content valuable to the planned digital library may have been published, recorded, or otherwise produced in Arabic and other non-Roman scripts, as well as in Western languages, we will explore improved application of technology to standards of representation and methods of acquisition (especially digital scanning). Second, integrating diverse electronic resources will give rise to considerable analysis and thorough planning to construct a common environment that is both scalable and, wherever possible, freely accessible to readers. AMEEL will achieve robust and intelligible standards that all can adhere to, the better to enable information to migrate easily to other settings and to be used alongside materials created elsewhere. While an initial prototype portal will emerge quickly, the larger integration challenge will be to make the fused content searchable in both English and Arabic, and deliverable, if possible, without costly subscription or license.

In addition, the portal to the digital library – an evolving electronic space consisting of Internet links, electronic materials in separate systems or catalogs, and newly digitized materials – will also possess overarching mechanisms that permit the user to perform cross-collection searches while still able to view, read, or listen to the specific items identified in the search results. Technical experts both at Yale and at collaborating institutions in Europe and the ME
will coordinate their talents to develop the proposed middleware to tackle challenges of multilingual searching as well as storage and retrieval of information held in diverse sources, catalogs, and databases and involving non-Roman script represented languages. Finally, the technical team will design this middle layer of software based on open source standards that encourage the free redistribution of software and the sharing of its source code.

2.3 Digitization: Scholars value information about resources available in traditional libraries but what they increasingly prefer, for reasons of utility and productivity, is access to online full-text content. Catalog information about materials no longer satisfies today's scholarly users. But publishers and vendors will never digitize many older full text items such as books and journals from the ME. The business case is not strong enough: there is not a large enough paying market for such materials and the costs of digitization are significant. These materials, however, particularly many journals, are vitally important for education and research. AMEEL will digitize a significant sampling of such materials.

2.4 Interlibrary Loan (ILL): Scholarly information in libraries in the ME has to date been either extremely difficult or altogether impossible to identify and obtain from ME libraries. Prior explorations, during the OACIS periodicals union list project, identified the issues regarding ILL for ME materials. ILL was assumed at the outset of OACIS to be something that would occur "naturally," given the existence of a union list. While OACIS was able to build an international union list of serials for a growing number of libraries, the ILL piece of the project was not particularly successful outside of the circle of U.S. and western libraries that already use ILL services. ME libraries have important and unique collections not available in the U.S., and they do not have a tradition of sharing resources through ILL, which means that not only is sharing among their libraries limited, but also that U.S. libraries cannot borrow materials from those libraries except in rare circumstances using personal connections. The ILL experience of the OACIS group has persuaded us to develop a component of AMEEL concentrating at the outset on the
development of an ILL framework for ME libraries. ILL is not simply a set of tasks or a technical transmission of a request and its fulfilling document. Rather, ILL involves policy at an institutional level, development of procedures that fit institutional workflows, an understanding of copyright law both nationally and internationally, and the potential to expand a circle of participating libraries both within a country and beyond its borders. AMEEL will lay the further technology foundations for such ILL and will promote a culture of ILL-based resource sharing among libraries in the region.

Project Narrative – 3. Significance of the Project

The creation and professionalization of ME studies as a discipline has its roots in the European and American "rediscovery" of Ottoman societies by western travelers and scholars in the nineteenth century. Edward Elbridge Salisbury, appointed professor of Arabic at Yale in 1841, was at that time the only such academic chair-holder in the United States. But the establishment of ambitious research collections in ME studies in the United States mainly falls in the years after World War II. Accordingly, there are few "natural," let alone comprehensive, collections of archival and library material covering fully the last century and more. American and European libraries are unlikely to achieve a comprehensive range of ME collections simply by working harder and gathering more than in the past, because too many years have passed; too many works are unavailable; too many titles are scattered in many libraries in many countries on several continents; and too few financial resources exist to fund such an ideal ME library. Without the digital revolution, we might well be at an impasse.

AMEEL (an Arabic and ME Electronic Library) aspires to make a contribution that can rival in importance those of both its 19th century and mid-20th century forbears. A truly comprehensive, scholarly, and accessible library of ME resources for the 21st century can be the engine for scholarly discovery, policy debate, and public information across cultures and
continents. The goals of AMEEL are ambitious ones, but the first steps we propose for funding are carefully chosen and precise in their modesty.

This project builds on its forerunner, Project OACIS (Online Access to Consolidated Information about Serials), wherein a Yale team and its partners began to develop information resources covering the ME. With grant funding from the U.S. Department of Education, under its TITLE VI TICFIA program (2002-2005), Project OACIS began rapidly to make a difference. Developing and representing a growing international consortium of libraries and institutions,\textsuperscript{5} OACIS built a bibliographical foundation of some 25,000 serials records, representing c. 14,000 unique titles with 45,000 holdings records from 83 countries in 45 different languages.\textsuperscript{6} On this bibliographical foundation, the OACIS team began to assess the work of developing important services: (1) to plan an Interlibrary Loan "front end" for the bibliographically described materials and (2) to launch a demonstration project in which we began to digitize a handful of ME-related periodicals. Our OACIS experience has enabled us to develop a strategy, identify appropriate first steps, and understand the challenges and opportunities of working in this vital world region.

In OACIS, we learned at first hand that successful efforts in this region of the world must be collaborative and must involve not only the traditional research institutions of Europe and America but also the universities, libraries, and other cultural institutions of the ME itself. Project OACIS has, moreover, confirmed TICFIA's fundamental premise: that electronic media can support the establishment of collections and services far more powerfully and far more economically than has been the case when collections are limited to traditional media such as print and microform. In short, the times, technology, opportunity, and desire to develop a digital library for the ME have come together in a fruitful conjunction. Now we can integrate, expand, and make accessible a much wider and deeper range of ME information resources.

Nonetheless, cooperation among institutions and adoption of electronic media for ME resources have emerged comparatively slowly. The greatest single obstacle has been the slow evolution and acceptance of standards for creating, representing, and viewing bibliographical
information and full texts in a combination of Roman and multiple non-Roman alphabets, especially Arabic, the most heavily used language in the ME. The contentious political and social climate of the region gives rise to serious obstacles to cooperation, even among libraries and educational institutions. Finally, too few librarians and curators have the requisite linguistic, subject, and professional training to make a difference in this area. Cooperation is both necessary for progress and, at the same time, an end in itself. Bringing together information professionals around a common project will achieve the immediate goals of this project, and it will also build a climate of professional respect and friendship across cultures from which many other projects can arise in years to come.

**Project Narrative - 4. Project Design**

AMEEL includes three components: integration of information resources, digitization of resources, and resource-sharing via interlibrary loan and document delivery. Each component has its own design. A summary timeline of the phases of the project may be examined in Project Narrative section 8 (Management).

**4.1 Integration Project: Constructing a Digital Library Architecture With a Portal to its Contents.** The portal for information seekers will be functional, extensible, and scalable. Residing under the visible portal will be a middle layer of software that makes links to chosen electronic resources, thus providing the underpinnings for a ME digital library. At the same time, we will develop the middleware layer to accommodate digital materials yet to be created. At the outset, the portal for access to this varied content will comprise coordinated directories of known Internet sites. As development of the middleware progresses, it will evolve into a more complex system of connected databases, catalogs, and union lists that permits searching and delivery of results from sources holding full content, whether text, audio streams, or other formats. A technical project team will be created of individuals from multiple partners called on at different intervals, with diverse and necessary skills, in both technical and area studies specializations.
Phase One of the integration portion of AMEEL spans approximately one year. During the first six months, a team including technical staff and area studies experts will compile an Internet directory of existing scholarly resources that focus on the ME. With the aid of a team of student workers, the initial directory information will be entered into an open source solution, for example, such as the open source software and tools provided by the Greenstone project. In this way, we will be able to create pages with fresh and updated directory links.

During the same time, the technical staff will also review candidate resources from universities and libraries and from other sources, for example, from commercial providers and publisher catalogs. Some academic institutions offering significant resources include project AMEEL partners such as the Universitäts- und Landesbibliothek of Sachsen-Anhalt in Halle, Germany; the Bibliotheca Alexandrina in Alexandria, Egypt; the University of Utah, which manages the American Overseas Digital Library; Brill Academic Publishers; Oxford University Press; JSTOR; and the Yale University Library. Among the many possible non-university sources are JSTOR in the United States; MultiData Services, Inc. in Beirut, Lebanon; Brill Academic Publishers in Leiden, The Netherlands; Oxford University Press in the UK; and other publishers in Europe and the ME. In addition, the technical staff, with assistance from their ME technical counterparts, will begin to determine the requirements to support the digitization phases of the project for new content.

During Phase Two of integration, spanning the second and third years of the grant, existing union catalogs will be incorporated into the portal (e.g., Yale's OACIS serials database, ENSTINET's union list of periodicals in Egyptian collections, and the American Overseas Digital Library (managed by the University of Utah library). In addition, the technical team will address three additional integration components. First, closer attention will be paid to the design of the user interface, which will expand into a more refined interface than Phase One's simple prototype portal. We will also develop and conduct a first usability study on the user interface. Usability studies carry out experiments to receive feedback about design and to provide necessary input for
system designers at different stages of a project. The design team will use the results of this and later usability studies to modify and improve the user interface. Second, research on connectivity strategies will continue, for example, covering communication methods between the Internet, servers, catalogs, databases, and individual computers via the secure FTP and Z39.50 technology. The team will combine the system plan from Phase One, which established policies on file structure, with the research done on connectivity, to produce deep access to the content held in the resources selected for AMEEL. The team of student workers used in Phase One to enter directory information will concentrate on tests to verify system and data integrity as the digital library evolves. Finally, the technical team will further review the software and tools used from the Greenstone (or other selected open source) software to produce an automated methodology for incorporating newly digitized content.

During Phase Three, spanning the fourth year of the grant, the technical team will introduce into the digital library new software that regularly checks the viability of the Internet links identified in Phase One. This link checker must be automated for long-term sustainability. Until this software is written, student workers can monitor the links to assure the integrity of the information presented by the portal. Once the viability checking software is part of the digital configuration, the student workers will test the search engines and results displays for accuracy, font clarity, and the time needed to complete a search. The student team will report any problems or issues that might require modification by appropriate technical team members. The technical team will also explore more complex systems as these apply to scalability and will review open source OAI (Open Archives Initiative) harvesters.

Finally, the technical team will complete all ongoing documentation of the technical requirements and processes that have been created, including those describing criteria for the future integration of content resources. We will also conduct a usability study comparing information retrieval from existing resources in contrast to materials held in the Greenstone (or other selected tool) architecture.
4.2 Digitization Project: Creating New Content for AMEEL. Project AMEEL staff will digitize an important selection of ME journals and other materials, with an emphasis on rare and unique items currently held in ME libraries, for the use of scholars, students, and other information seekers in the U.S. and around the world. We will bring as well to U.S. institutions of higher learning the digitizing skills and expertise of ME librarians, especially those working on cutting edge electronic content projects. This will be done through two highly specialized workshops for Arabic digitization, developed with the Bibliotheca Alexandrina, as a result of which we will enable U.S. and other institutions to digitize more and more needed materials in the future.

Digitizing materials from the ME, in non-Roman languages such as Arabic, brings special complications. For example, U.S. libraries often hold incomplete runs of serials, necessitating coordination and/or transport from home or abroad, for digitization. Material published in the ME may have special handling or preservation requirements, particularly if it is out of print and irreplaceable. Finally, recognizing Arabic letters (i.e., Optical Character Recognition or OCR) from a scanned Arabic page image requires special digitization routines, skills, tools, and techniques to create the clearest possible scans, in order to produce searchable text. Our partner library, the Bibliotheca Alexandrina, which has developed the most advanced digitizing systems for Arabic, estimates that they have encountered at least 22 different font styles for presenting this language, and that each requires special recognition and correcting protocols.

In the AMEEL digitizing component, all material will be scanned with specially developed digitization procedures and workflow. The standards for this part of the project will be developed by consulting several sources: experts in digitization of Arabic text at ME libraries (particularly the Bibliotheca Alexandrina), project requirements from such efforts as the Million Book Project, and newly released guidelines from the National Archives and Records Administration. Preservation will be an important component of the digitization choices and standards, so that the digital files will be portable into the future.
Selection of materials for the digitization portion of Project AMEEL will take into consideration such criteria as scarcity of the material, condition of the physical objects, value in research, age, place of publication, and copyright status. Project AMEEL will cooperate in order to avoid any duplication of effort with projects such as the Middle East Research Journals Project. Periodicals to be digitized will be selected from among the 14,000 unique serials in the OACIS database according to criteria developed by MERJ under a CAORC-funded project. We will begin by selecting approximately 15 periodical titles that were published before 1923, in order to avoid copyright problems. Based on our initial experience with these periodicals, we will calculate how many more titles can be digitized under the AMEEL rubric. Different sizes and fonts will require different digitization workflow and processes, with costs also based on condition and location. AMEEL will prefer journals currently held only in ME institutions. In addition, some journal content may be digitized through the Interlibrary Loan efforts of AMEEL (see next section), i.e., some content will be added based on journals or books scanned for Interlibrary Loan and then included in the project.

The digitization will happen in several ways and locations. Unique texts in the ME will be scanned at the Bibliotheca Alexandrina, whose staff have excellent experience and track record in digitization of Arabic texts. U.S. materials judged to be in sufficiently good condition may be sent to an American expert vendor chosen through an RFP process, for scanning to the specifications established by the project. Materials held by a U.S. partner institution that cannot be sent to a vendor for scanning will be digitized at Yale or at the local institution. Finally, materials that are requested from other institutions through the AMEEL-ILL project will be scanned at the holding institutions, using the standards the digitization project will create.

We will provide online access to all the materials that we digitize. We currently plan to do a great deal of OCR scanning (though some titles may be scanned solely as PDF image files), to enable readers to search the full text, and also to provide page images. Whenever appropriate,
metadata for the digitized material will also be available to OAI (Open Archives Initiative) harvesters, thereby increasing discovery and access to the materials.

Many U.S. libraries already have extensive experience with digitizing content, but there is no installed base of Arabic OCR expertise in this country. Arabic materials require not only knowledge of the language but also special procedures and software. To expand the necessary knowledge and skills for Arabic text digitization to institutions in the U.S., the AMEEL project will collaborate closely with the Bibliotheca Alexandrina (Egypt), which under this project will sponsor two two-week-long workshops wherein ME technical experts will instruct U.S. partners and enrollees in the required software, methodologies, and techniques to perform Arabic OCR and also to create page images. In addition, the workshops will aid U.S. librarians in understanding how the condition of Arabic texts affects the handling of materials for digitization, as well as what are the required metadata for preservation and presentation scanning. The workshop will be repeated during the term of the grant, and our goal is that it will find its way into a regular, practical digitizing curriculum in the U.S.

Digitization will proceed in four year-long phases:

*Year One:* selection of materials for digitization and preparation of technology, protocols, and expertise in consultation with our international digitizing partners.

*Year Two:* a Bibliotheca Alexandrina specialist serves an internship at the Yale Library to share expertise and optimize planning; full scale digitizing begins at Yale and partner libraries; first digitization workshop held. Development and testing of presentation interface for digitized material.

*Year Three:* digitization continues; a second internship serves to further embed expertise at Yale and other U.S. institutions; second digitizing workshop is held; presentation of digitized materials in the AMEEL portal; planning for Interlibrary Loan or other document delivery of digitized materials.
Year Four: digitization continues; user interface refined on the portal; user surveys to determine next steps and desirable additional content.

4.3 Interlibrary Loan Services: Improving Shared Access to Resources. In any effort to develop a complex and complete site for ME scholarship and information, it is important to develop service components that support the broader goals of the portal. One obvious service extension is to tie in scholarship or information that has not yet been digitized and made available for network access. To that end, AMEEL proposes to explore interlibrary loan (ILL) and its intersection with digitization. "Traditional" ILL proceeds on the basis of a request or need for a known item and acts on each request as and when a reader makes it. Digitization usually proceeds on the basis of anticipated need and produces a larger, coherent body of digitized materials gained through production efficiencies. Regardless of the path taken, digitization and ILL both result in the delivery of content that has not so far been available. Developing an ILL practice in the ME will enable a flow of print and digital information to scholars affiliated with U.S. and other institutions.

Only recently has technology been available to assist the communication and transfer of ILL requests, the documents that fulfill those requests, and any accounting of charges that is agreed upon by the participating institutions. Such ILL agreements in the U.S. and other developed countries are the bedrock upon which users' expectations of access rest. That bedrock, however, simply does not yet exist in many countries of the world. The ILL services of AMEEL aim to build that foundation through communications and connections already existing in the main ME library and professional societies such as the Middle East Librarians' Association (MELA), the European Association of ME Librarians (MELCOM International), and the Arab Federation for Libraries and Information (AFLI). Working through these partner organizations and with volunteer "pioneer" institutions within them, AMEEL will demonstrate what can be accomplished to enrich existing services in libraries around the world as part of a portal of scholarly research and information on the ME.
AMEEL-ILL has an important advantage in beginning ILL development in countries without an ILL tradition. One essential component of ILL, mentioned above, is a union catalog of library serial holdings. In the ME, the OACIS union catalog is already available and can include the holdings of any library interested in participating in ILL. ILL need not be restricted, moreover, to photocopies or faxes or scanned copies of articles in periodicals. Any exploration of ILL within AMEEL should examine an easy way to identify also the book collections of participating libraries. Accordingly, AMEEL will explore options for cross-searching library book collections with Z39.50 tools or other broadcast search mechanisms that will simplify a search for book materials on the ME.

The next step of the AMEEL-ILL service will be to develop and strengthen ILL tradition in a handful of pioneer libraries in the ME. Criteria for identifying these libraries include: a strong library with an interest in developing ILL, a catalog converted already to digital format, and willingness to serve as a catalyst with which to encourage ILL to flourish in other institutions in the country or region. Given the existing framework of MELA, MELCOM International, and AFLI, we will work with and within those organizations to solicit and identify the early adopter AMEEL-ILL institutions. Based on initial contacts, we have reason to expect a handful of national libraries in the ME will volunteer.

Follow-on work will involve the development of marketing and promotional activities, as well as training to encourage other libraries in the partners’ countries to establish ILL and joint agreement on best practices.

In Year One, we will work with AFLI, MELA, and MELCOM International to conduct focus groups and explore the interest of potential partners in this component of the project, seeking 5-10 partner libraries. By the end of the first year, we will select two partner libraries for intensive work to understand their needs and processes; librarians from partners in the ME will visit the U.S. to study firsthand American practices. In Years Two and Three, the work will expand to include additional partners. At this critical stage, the developed guidelines, protocols
and procedures, and suggested implementation techniques and options will be tested in new libraries, where discrepancies in approaches or needed flexibility or rigidity in the guidelines will be uncovered. In addition, at this stage we should expect to learn whether ILL is easier or harder to institute between and amongst ME Libraries than simply between ME Libraries and a U.S. partner such as Yale University. Also, in the third year, a handful of U.S. libraries will be invited to join the ILL development process. We will restrict the number at the outset to enable us to measure carefully the impact on ME institutions of this increased access. In Years Three and Four, we will proceed to more systematic just-in-time scanning and digitization of requested materials, to study protocols for sharing those digital objects, and to develop work processes that minimize costs and need for staff intervention in fulfilling requests. Finally, well into the fourth year, we will conduct a workshop at a meeting of MELCOM International or AFLI to discuss the protocols and practices with a larger audience and to market the new service to a wider community.

Project Narrative - 5. Project Personnel

This core team of project staff brings a wealth of experience. Full CVs are provided separately. We also list in this section briefly the substantial contributions anticipated from our consortium partners.

Principal Investigator: Ann Okerson, Yale's Associate University Librarian with specific responsibility for Collections Development and Management and all international and area studies. She is particularly known, nationally and worldwide, for her work on the impact of electronic publishing, in the arena of electronic costs, and in copyright/licensing for the electronic environment (see <http://www.library.yale.edu/~okerson/alo.html>). In addition to the PI role, Ms. Okerson will provide support for intellectual property and economic issues.

Project Manager and Integration Specialist: Elizabeth A. S. Beaudin, Technical Administrator, Yale Library. Dr. Beaudin's work included developing the software, interface, and
technical communications of the recent OACIS project. Her standing as a scholar of Medieval Spanish Literature positions her nicely to balance the demands of technical architecture with the scholar’s needs for useable content. She is also a systems architect with 20 years of information technology experience, during which she has developed both academic and administrative systems in a university environment. Dr. Beaudin will coordinate the separate sub-components of AMEEL and will keep a day-to-day eye on progress toward meeting the specific AMEEL goals, as well as taking responsibility for accomplishing the technical achievements of the project.

**Project Outreach Director:** Simon Samoeil, Curator, Near East Collection, Yale Library and member of the Yale Council on ME Studies. Mr. Samoeil's specific contributions as Project Outreach Director will include selecting the project content and establishing and shaping the partnerships needed to accomplish the work. Mr. Samoeil has a broad and deep understanding of the field of ME Studies and the scholarly resources needed to support Yale's academic program. Mr. Samoeil travels regularly in the ME and has developed numerous contacts there over the years. Before his arrival at Yale in 1990, Mr. Samoeil worked at the libraries of Harvard and the University of Pennsylvania and at King Fahd University in Dahran, Saudi Arabia.

**Digitization Specialist:** Jennifer Weintraub, Digital Collections Specialist at Yale Library, she facilitates collection development aspects of digital conversion projects at Yale and helps to coordinate all aspects (metadata, interface, preservation) of newly launched digitization projects in the Library. Ms. Weintraub led the digitization demonstration project in OACIS, and brings a solid understanding of some of the OCR challenges of non-Roman text to AMEEL from that work. Ms. Weintraub will lead Yale’s involvement in the digitization sub-component of AMEEL, coordinating with the digitization partner, Bibliotheca Alexandrina.

**Interlibrary Loan Specialist:** Carol Jones, Head, Document Delivery and Interlibrary Loan at Yale Library, directs the interlibrary loan office in the largest Yale library and coordinates the five interlibrary loan offices in the Yale system. She has been an innovator in the interlibrary loan arena, having helped launch the Borrow Direct program that led directly to
significant efficiencies in ILL resulting in greatly reduced costs and improved turn-around time. Ms. Jones also worked in Sultan Qaboos University Library in Oman from 1985-1988, and thus has good cultural experience with the library practices in the region. Ms. Jones will lead Yale’s involvement in the ILL sub-component of AMEEL, coordinating with the ILL pioneer partners.

**Systems Analyst and European Project Director: Lutz Wiederhold**, Halle-Wittenberg University. Director of the MENALIB partner project at Halle-Wittenberg, Dr. Wiederhold brings deep technical expertise and broad experience. With him, AMEEL will be building "crosswalks" between U.S. and European components and developing standards for further collaboration. He will also be establishing mirror sites for the project in Germany.

**Information and Computer Technology Director (ME): Noha Adly**, Bibliotheca Alexandrina, Chief Information Officer of one of the most venturesome and advanced institutions in the ME, where she directs many technically complex activities. Dr. Adly manages a staff of 42 specialists digitizing Arabic texts in the leading center of such expertise anywhere in the world. She will bring that expertise to the project both to support digitization projects and to provide training and consultation for western institutions that seek to develop similar competence.

In addition, the members of our partnership (their letters of support are provided separately) will bring important technical resources and expertise to bear, including:

- **Arab Federation for Libraries and Information (AFLI):** support in developing Interlibrary Loan workshops and training in the ME.

- **Bibliotheca Alexandrina:** world leaders in digitizing Arabic materials, they will share expertise and experience to support institutions seeking similar capacity

- **Brill Academic Publishers:** major academic publisher of digital reference works in ME scholarship, including the absolutely indispensable *Encyclopaedia of Islam, Index Islamicus*, and many more key works.
• **Council of American Overseas Research Centers (CAORC):** CAORC’s ME journals project is well advanced in developing criteria for selecting journals for digitization.

• **JSTOR:** the leading American producer of digitized collections of retrospective journals, they will provide advice on access models, digitizing, and expert legal consultation about copyright management, as well as explore ways to integrate their appropriate resources in AMEEL’s structures.

• **Middle East Librarians’ Association (MELA):** this body of North American curators of ME collections offers its expertise as needed, access to the collections they represent, and guidance on the needs of users.

• **Multidata Systems, Inc.:** MSI has the largest collection of relevant online resources in politics, business, and other contemporary areas and has created the largest archive of current Arabic periodicals in digital form.

• **National Library of Egypt:** their 10,000 periodical titles offer important materials for digitizing and ILL.

• **Oxford University Press:** publisher of several significant journals in the area, prime targets for digitization and integration into AMEEL.

• **School of Oriental and African Studies (University of London):** SOAS has one of largest collections in world focusing on the ME, especially strong in early periodicals and monographs of high value for digitizing.

• **Universitäts- und Landesbibliothek Sachsen-Anhalt (Halle-Wittenberg):** the central institution for collection of ME digital materials in Germany, their management and staff will work with us to integrate resources and establish standards.

• **Yale University Department of Near Eastern Languages and Literatures:** our own very distinguished faculty offers strong support that will take the form of scholarly expertise, guidance, and direction for the project as a whole.
The goal of Project AMEEL is to develop effective and robust technology layers, on top of which highly effective, important, and necessary services (both content and functionalities such as linking, access, readability) will be provided.

By introducing the open source approach to digital library creation at an early stage and maintaining this approach throughout our work, the highly skilled and experienced AMEEL project team will enable not only the integration of resources that are defined to be part of AMEEL, but will also lay a sturdy foundation for integration of digitized materials that will be created in the future by others in efforts that have not yet been launched. The services will be made possible through the work of the team and assistance of experts in areas of digitization, metadata, text encoding standards, as well as real users who will be part of a continuous review and refinement process. For this, the faculty and students of Yale and other participating institutions (libraries who are members of the Middle East Library Association, for example) will provide frequent reality checks and guidance.

Initially, we will select 2 - 4 major ME resource sets to be made available through the AMEEL portal to ME students, researchers, and information seekers. Selection will be based on the importance of content (major indexing services, full text periodicals) to users, while giving preference to content whose technical standards and architecture will facilitate rapid progress and will help to define standards for future robust development and enhancement. By the end of the first year of effort, we will create an organized directory of Internet resources while at the same time connecting real readers to the "front door" level of the first group of selected resources.
From the beginning, the efforts of the AMEEL team, which includes technical staff from the institutions of the initially selected target publications (major publishers with significant technical development staff on call), will focus on analyzing the software and system configurations controlling the pilot resources, in order to provide a digital library that is effective for end users. In order to design the middleware to connect the selected resources at a more discreet level, that is, beyond "front door" access, the technical efforts will develop the architecture that permits coherent and meaningful searching inside the contents of the available resources. The middleware will connect readers to content that is freely accessible outright as well as to content from commercially licensed sources. Along with the technical challenges of designing an integration plan, we will also address how to provide transparent access to content in the cases where the resources are supplied by commercial (for profit and not for profit) providers.

In order to provide usable, seamless access for readers, research on connectivity strategies will continue throughout the project, covering, for example, options for communication methods between the Internet, servers, catalogs, databases, and individual computers via the secure transfer of files and Z39.50 technology. Throughout the project, we will establish technical policies including sensible naming conventions and file structure so that additional content resources can be effectively and efficiently added as the project progresses.

During the last part of the grant period, the technical team will introduce into the digital library new software that regularly checks the viability of the Internet links chosen for AMEEL. It is important that link checking be automated for long-term utility sustainability. Once the checking software is part of the digital configuration, the students (and faculty) will test the search engines and results displays for accuracy, font clarity, and the time needed to complete a search. The project testers and other users will report any problems or issues that require modification by appropriate technical team members. The technical team will also explore more
complex systems as these apply to scalability and will review open source OAI (Open Archives Initiative) harvesters.

Whenever appropriate, metadata for any material digitized and added to AMEEL will be available to OAI (Open Archives Initiative) harvesters, thereby increasing widespread discovery and access to the materials. We are hopeful of advancing, in this way, other significant digital projects such as the Million Books project. The planned Arabic digitizing workshops will create templates that will enable Arabic OCR to become part of regular offerings in digitizing programs across the U.S., Europe, and the ME.

Because document sharing and delivery between U.S. and ME libraries does not currently exist, AMEEL-ILL will open up an entirely brand new and significantly fruitful ability for resource cooperation and sharing and sources of information supply for U.S. students and researchers. This new service will be supported by the latest technologies in use in U.S. libraries, including Ariel digital transmission and faxing where digital transmission is not possible.

Project Narrative – 7. Project Resources

The fundamental conviction underlying AMEEL is that the benefits of enhanced digital library resources and access in Arabic and ME studies will be of almost limitless value, but that the necessarily limited resources of an initial phase need to be leveraged shrewdly to maximum benefit. Accordingly, the project focus is on standards, architecture, core services, and on piloting scalable, sustainable operations. The project leaders' previous experience with OACIS has provided a refined and clear sense of which steps would most effectively lead to the creation of an electronic library of great value in its own right and at the same time to the facilitation of future projects and contributions to the common enterprise. Success for AMEEL will not be limited to doing a few things well, but will be measured by the future activities of many players who are enabled to create and propagate resources of high value more easily and more efficiently and for the benefit of a wider audience.
Individual components of AMEEL are then not so much demonstration projects as pilot projects. For example, if we prove concept and viability of ILL and document delivery across the partner base we imagine, then what we have accomplished will become a first step within that group towards building higher levels of service and bringing in more and more partners over time, who will enter because they see the benefit for their own users of a robust service. Our expectation is that at every stage, the work actually done will directly benefit a wide range of users and at the same time will make the next pieces of work easier and more attractive.

To calculate AMEEL’s cost/benefit ratio properly would require us to assess the usefulness of access to more and better quality electronic resources for a population that is potentially numbered in the hundreds of millions. In the short term, however, the benefits will accrue to scholars, students, and teachers on every continent and across many cultures; but more than that, the information brought together in this project will necessarily be of high value as well to policy makers, journalists, businesses, and very often a general public as well that is hungry for more and better information about the history, cultures, and politics of a region of the world of urgent interest to the citizens of many countries today.

The work of AMEEL, done well, will increase the potential for support for related projects when the TICFIA funding has expired. We will have created a common enterprise in which many can share and in which many have an incentive to share. The large demand for creating digital resources in Arabic and ME studies in years to come will be able to express itself more clearly as a demand for new elements of AMEEL itself and to be achieved more efficiently by taking part in this common enterprise rather than creating standalone, non-standard resources – which would inevitably be more expensive and less effective than what will be possible through AMEEL. AMEEL leverages as well existing projects (such as the CAORC journals digitization or the Million Books project that has engaged the Bibliotheca Alexandrina) to greater effect.
Yale University is bringing some of its best talent to bear on this project and is providing cost-sharing at and above (on a year-by-year basis) the 33% minimum required for funding applications through TICFIA. The Budget Narrative Section outlines detailed costs and cost-shares. It should be emphasized that the opportunity costs for Yale are substantial as well, in that our commitment to this project concentrates resources that would otherwise be distributed among other continuing commitments. The contributions of our prospective partners are of significant value as well and there will be substantial undocumented contribution of value from, e.g., the learned publishers who work with us to make their resources available in AMEEL-compliant digital form. Yale is committed, finally, to hosting and sustaining AMEEL as a signature project of the University's commitment to learning and understanding in Arabic and ME studies and as a contribution to the common enterprise of scholars and other users around the world.

Project Narrative – 8. Project Management Plan

AMEEL management will be divided between central management of the overall project and management of the individual components.

The Principal Investigator, Yale's Associate University Librarian for Collections and International Programs will coordinate the project, keeping it on target and on time. The Project Manager has been serving as OACIS Technical Administrator and will now be re-focused to take on day to day responsibilities for AMEEL, ensuring that the specified tasks are accomplished, that the separate components of the project are coordinated and in communication, and that appropriate goals and timelines are achieved. In addition she will also serve as the technical leader of the integration sub-component of AMEEL. Yale's Near East Curator will undertake the significant task of Project Outreach Director, managing the relationships with and among all of the project partners, both in the U.S. and particularly overseas. Yale’s Digital Collections Specialist will lead the digitization sub-component of AMEEL, and the Head of Document Delivery/Inter-library Loan services will be responsible for the ILL sub-component of AMEEL.
The Partners' Working Group will include representatives from the partners of each of the sub-components of AMEEL: those technical partners working on the integration aspects, the digitization partners, and the ILL pioneers, as well as strategic personnel from the Yale Library. The Partners' Working Group will meet annually during the grant term and will discuss and resolve issues relating to integration challenges, digitization protocols and workshop techniques, ILL protocols, coordination of evaluation, etc. The Partners' Working Group will be not just an advisory board, but also a group that actively contributes to each of the activities of AMEEL.

Key project staff are listed under Investigators and additional staff time is explained under Notes on the Budget.

Each component of AMEEL will have its own administrative focus and responsibility.

8.1. Integration: The integration component of Project AMEEL will have its own project manager, since the tasks described herein involve not only the technical steps for the creation of the digital library and its portal (along with the integration of content into the digital library), but also research and support efforts for its other components. Project management support will also coordinate the efforts of technical specialists from several institutions with the project team and the library areas at Yale involved in the project.

8.2. Digitizing. The digitization portion of AMEEL will draw on small portions of time of various Yale and Middle Eastern staff throughout the four years. The work of these staff members will initially be in planning the project and then in implementing the digitization and overseeing its development. The project manager will ensure the digitization is being done according to schedule, will ensure quality control on digitized material, and will evaluate the project as it emerges.

8.3. Interlibrary Loan. The ILL portion will draw on the services of a uniquely qualified project manager: the head of interlibrary loan at Yale has substantial prior experience working in the Arabic world herself. She will drawn on participation of Yale staff skilled in interlibrary loan practices. The ILL portion will also require some small attention from technical staff supporting
the rest of AMEEL, to ensure appropriate transmission of ILL requests, exploration of creative new ways to co-search various online catalogs, and experimentation with digital presentation of ILL documents.

Success of AMEEL will entail the close working cooperation of institutional and individual partners, in the US, Europe, and the ME. We have listed in Project Narrative Section 5 (Personnel) the main partners currently supporting AMEEL and sketched the contributions they will make, whether through collaborating with us to connect their content to the AMEEL portal, sharing their expertise on digitization, or working with us to jointly develop ILL protocols. In each case, the institution and any specific individuals partnering in AMEEL will be carefully selected to fit detailed criteria for the needed tasks, and will be expected to be a full contributing partner to the project, learning from our experience and sharing their own.

Any individuals selected to work on AMEEL, for example as interns, will be the key means of information transfer to their home institutions. The prospective candidates will be recruited through a competitive process, and the applicants must be recommended by their library/company directors and colleagues who are involved in AMEEL. Institutional partners have been and will be chosen on the basis of compatible goals, a willingness to engage fully in the integration, digitization or ILL aspects of AMEEL, and control of content or skills of interest to the AMEEL project. Each institutional partner must be willing to contribute significant amounts of their own resources to supporting the collaborative activities of AMEEL, and the partners we have identified to date are all prepared to do so. As described above, the Partners' Working Group will be the vehicle for coordination, feedback, and common conversation about the progress of the project.

Appended to this section of the Project Narrative is a graphical timeline outlining in some detail the milestones and interrelation of the elements of the project. A broad outline of the proposed project progress can be summarized in this way:
* At the end of Year One, a prototype portal will be in place, with links to important resources in the area of ME Scholarship. This will be available as a work in progress to the wider global Web community. A selection policy for the digitization of materials will be in place, and development of the presentation interface for the digitized content will have begun. The ILL sub-component will have conducted its initial focus groups, selected initial partners and begun conceptualizing the needed ILL protocols.

* By the end of Year Two, the integration work will be visible in the form of incorporated union catalogs and some basic integration of 2 - 4 selected information resources. The first digitization workshop will have been held, and full-scale digitization will be underway. Within ILL, the protocols will have been drafted, and initial ILL tests will be underway, developing protocols and enabling deeper understanding of the opportunities and challenges of resource sharing in ME Libraries. Also by this stage, we will be conducting intensive evaluations of the user interface to the portal.

* By the end of Year Three, research will have been completed on the most effective technical communication protocols for facilitating integration of diverse ME electronic resources. As many as 4 substantial information resources will have been successfully integrated. Workflows will have been designed for smooth submission of digitized content. A second workshop on digitization will have been held. The presentation interface of digitized materials will be released to the global Web community for review and comment, and the digitized content will be available for use. ILL will have expanded beyond the initial early adopters to other pioneer Middle East Libraries and a select number of additional U.S. and European libraries. Procedures for digitizing ILL requested materials to the standards needed for the ongoing presentation of digitized content will be ready for use, and ILL participants will have been introduced to them.

* Year Four will see additional integration work solving some of the more intransigent of technical integration problems between systems of disparate software structures. The
portal user interface and the functionality of the integrated content will be tested through user studies. The digitization work will continue, working to integrate digitized materials arriving through ILL workflows, improving the presentation interface of the digitized content, and incorporating the digitized presentation interface with the other integrated content in the AMEEL portal. ILL work will be rounded out by a workshop presenting the refined ILL protocols developed over the course of the project and the development of marketing and publicity techniques to encourage further spread of ILL within the ME. The project will wrap up with a formal evaluation of the achievement of all the goals of the project, and user satisfaction in general with the AMEEL digital library.
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- Integration
- Selection & Analysis
- Internet directory
- Prototype interface
- Union list integration
- User interface
- Portal development
- Telecommunications
- Resource integration
- Testing
- Documentation

- Digitization
- Materials Selection
- Metadata planning
- Intern
- Scanning
- OCR processing
- Workshops
- Metadata
- Implementation
- ILL data acceptance
- Sustainability planning

- Inter Library Loan
- Focus groups
- Pioneer selection
- Policy writing
- Practices development
- Travel to ME pioneers
- ILL experimentation
- Conference
- Partner selection
- Integration
- w/digitization

- Evaluations
- ILL base line
- User interface
- Content retrieval
- ILL usability
- Digitization usability
- Usage statistics

The internal communications of the participants will be conducted intensively on a closed e-mail list, archived on a project Web site. Monthly progress summaries, with ample opportunity for comment, suggestion, and critique, will be prepared for the participant team and will serve as a record and benchmark of ongoing activity. On the public part of the Web site will appear not only the actual project effort as it develops, but also a form for suggestions and comments from users; occasionally surveys will be posted there as well. Annual reports will be prepared not only for TICFIA but also for all participating institutions and will also be made available to the readership of AMEEL. The role of the Principal Investigator and Project Manager will be, in part, to assure that AMEEL work is kept on target and on time. Each of the above activities, plus the specific assessment plans below, will assure evaluation and tracking on an ongoing basis for the duration of the effort.

Each of the three components of AMEEL will develop and pursue its specific assessment plans, as follows:

A. The integration component of AMEEL will evaluate success in the following ways:

* Collect statistical data from the release of the prototype interface, during Phase One, through to the end of the four-year cycle, to trace usage at the server level and Web site level, as well as tracking the frequency of search term use.

* Conduct detailed usability studies related to two aspects of the development process: (1) the user interface, and (2) growth of significant content, i.e., perceived quality of new materials being integrated into the emerging digital library.

* Consider the integration component to be successful when we have been able to connect the portal directory to significant content. In other words, by means of the common portal, the
directory of Internet links and union catalogs related to the ME will connect effectively and seamlessly to content from up to four significant existing electronic resources.

B. The digitizing component of Project AMEEL will evaluate success as follows:

* With the integration team, conduct usability surveys of the interface at different points in its development to be sure we are meeting the needs of researchers, educators, and those interested in Arabic language materials; we will modify our work based on the feedback of users.

* Assess the needs of U.S. partners regarding Arabic digitization skills in order to prepare for the digitizing training workshops and to develop a template course.

* Towards the end of Year Four, a formal survey of all digitization participants will be conducted to evaluate this part of the project. The digitizing effort will be evaluated on quality and volume of items digitized, usage, and the extent of advancement of digitization knowledge and skills in the U.S. and ME.

C. The ILL component of Project AMEEL will evaluate success in the following ways:

* In general, the documents requested through AMEEL-ILL will be examined to determine how many of them could have been fulfilled from other sources than the AMEEL-ILL partners. A percentage less than 50% will be considered a success.

* At each of the testing points in the stages of AMEEL-ILL, measures for success will be hypothesized in advance, and the results of each test will be evaluated against the specific measures for that test.

* Institutions joining in AMEEL-ILL at the beginning of Year Three and afterwards will be surveyed regarding the utility and applicability of the documented ILL guidelines and protocols, and the results of those surveys will be used to review and revise the documentation.
* Towards the end of Year Four, a formal survey of all AMEEL-ILL participants will be conducted to evaluate the success of the ILL aspect of the project.

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1 One strength is that a single interface can be designed to lead people to those resources they have access to by virtue of their institutional or other affiliation. So a link to a printed book would take the reader in the first instance to a call number of the copy in his or her own institution's library (a similar type of linking has just been implemented in OCLC's WorldCat system) and/or to links to ILL borrowing forms to which the reader was entitled.

2 CAORC is the Council of American Overseas Research Centers <http://www.caorc.org/>. The Council is developing the American Overseas Digital Library, a union catalog maintained at the University of Utah library <http://aodl.lib.utah.edu/ipac-cgi/ipac> that contains monographs, dissertations and journal titles in the American Overseas Research Center libraries.

3 The Center for Research Libraries in collaboration with CAORC has initiated the Middle East Research Journals Project or MERJ <http://www.crl.edu/FocusArticles/MERJ_Article.htm> with funding from the Institute of Libraries and Museums Services. The project hopes to provide bibliographic information and preservation microfilming for an important subset of over 2,220 selected journals.

4 Unicode is an internationally accepted encoding system embracing virtually all the writing systems of the world and thus allowing the storage and display of languages across platforms, browsers, and programs. For more information, please see <http://www.unicode.org/>.

5 Bibliotheca Alexandrina (Alexandria, Egypt), Cornell University, New York University, Ohio State University, Princeton University, Tishreen University (Latakia, Syria), Universitäts- und Landesbibliothek of Sachsen-Anhalt (Halle, Germany), University of Jordan (Amman, Jordan), University of Pennsylvania, University of Michigan, University of Texas, University of Washington, and Yale University. Other foreign institutions' records, including those from Egypt, Lebanon, and the UK, are planned for inclusion.
The top ten countries represented are: Egypt, Turkey, Iran, Lebanon, Pakistan, Morocco, Iraq, Saudi Arabia, Syria, and Tunisia. The top ten languages are: Arabic, English, Persian, Turkish, French, Russian, Turkish-Ottoman, Azerbaijani, Somali, and German.

See some current attempts at ME portals, for example, the Library of Congress’ Portals to the World at <http://www.loc.gov/rr/international/portals.html>. Major American universities and their libraries often supply good directories on their Near East resource sites; see, for example, the Near East Collection site at Yale University library <http://www.library.yale.edu/neareast/>, the University of Michigan library’s Near East Division <http://www.lib.umich.edu/area/Near.East/index.html>, or Princeton’s Near Eastern Studies Resources site <http://www.princeton.edu/~pressman/neareast.htm>.

For a description of the software and utilities, please see: <http://www.greenstone.org>.

Secure FTP (File Transfer Protocol) is a software standard for transferring files between computers regardless of their operating systems and relies on authentication to the files’ source by the use of assigned user identification and passwords. As explained by the Library of Congress, "Z39.50 is a national and international (ISO 23950) standard defining a protocol for computer to computer information retrieval. Z39.50 makes it possible for a user in one system to search and retrieve information from other computer systems that have also implemented Z39.50 without knowing the search syntax that is used by those other systems." See LC site at: <http://www.loc.gov/z3950/gateway.html>.

The Open Archives Initiative (OAI) facilitates interoperability in disseminating content over the Internet. Projects that produce metadata conforming to the specification can be included in systems that enable scholars to find in collections digital resources that search engines cannot reach. OAI harvesters are software programs that search the Internet for metadata conforming to published OAI standards. See <http://www.openarchives.org/documents/index.html>.

For these new guidelines, see: <http://www.archives.gov/research_room/arc/arc_info/guidelines_for_digitizing_archival_materials.html>.

MELA <http://depts.washington.edu/wsx9/melahp.html> is an organization of librarians and others interested in supporting the study of or dissemination of information about the ME. MELCOM International <http://www.uni-bamberg.de/unibib/melcom/> is devoted to promoting co-operation among individuals and institutions in Europe, North America and the ME concerned with all aspects of librarianship, book collecting, the book trade and publishing; MELCOM International hosts a yearly conference. AFLI <http://www.afli.librariannet.com> and
<http://www.afli.org> is a ME based association of libraries from Arab countries with annual meetings and workshops.

File Transfer Protocol (FTP) is a software standard for transferring files between computers regardless of their operating systems. Secure FTP relies on authentication to the files’ source by the use of assigned user identification and passwords. “Z39.50 is designed to enable communication between computer systems such as those used to manage library catalogues.” from the thorough explanation provided by Paul Miller of the University of Hull, Great Britain at: <http://www.ariadne.ac.uk/issue21/z3950/>.