

Metals Conservation Summer Institute Abstract
Sponsored by the Higgins Armory Museum and Worcester Polytechnic Institute (WPI)
14th to 25th June 2004

The Higgins Armory Museum and WPI are collaborating to create a new objects conservation program with a focus on metals conservation. Higgins Armory Museum and WPI propose to initiate this long-term project by presenting a series of three consecutive two-week summer conservation institutes in 2004, 05 and 06.

These Metals Conservation Summer Institutes (MCSI) will enable the Higgins and WPI to demonstrate national leadership in the field of metals conservation and will lead the partnering organizations to identify key faculty and participants to assist in planning a strong foundation for a future graduate program in objects conservation. This plan has clear objectives and goals, and provides all the IMLS grant requirements, including: sustainability, strong management, qualified personnel, wide dissemination strategies, design reflecting actual demand and need in the field, project evaluation and a plan for adaptability.

WPI is a national leader in metals research and is home to the Metals Processing Institute (MPI), a research leader in the field of metals properties for industrial application. The Higgins Armory Museum (AAM accredited) has one of the largest collections of historical and archeological metals in the nation, famous primarily for its extraordinary collections of arms and armor. WPI, MPI and the Higgins Armory Museum collectively offer unique laboratory facilities and research expertise that will guarantee the national significance and the quality of this project.

Goals of the partnership: The intention is to create an enduring collaboration between the two institutions leading to the establishment of a regular summer conservation program, and leading to a graduate degree program in objects conservation with a focus on metals.

By establishing a Metals Conservation Summer Institute (MCSI) we are initiating the first step of this large-scale metals conservation plan. The inaugural course will be held during the summer of 2004, with the intent that this will be the keystone for a cohesive and enduring partnership between the Higgins Armory Museum and WPI; an initiative that capitalizes on the historical legacy of both institutions. The MCSI has been developed to meet the identified needs in the field; to harness joint facilities and expertise; to create a conservation program to benefit the urgent needs for conservation of objects of the Higgins Armory Museum's collections; to provide a nationally and internationally recognized faculty of experts in the field to organize a nationally significant service to the field; to expose students to a major collection of archeological and historical metals objects; and to develop a new conservation curriculum.

The institutions anticipate building on the strengths of the summer institutes to establish the region's first graduate degree program in conservation with a focus on metals properties. The institutions anticipate that the experiences gathered at the MCSI program will form a solid foundation for this new graduate degree program.

Proposal to create a Metals Conservation Summer Institute sponsored by the Higgins Armory
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INTRODUCTION: *The Plan:* The Higgins Armory Museum and WPI are collaborating to create a new objects conservation program. Numerous meetings over the past twenty-four months with leaders in the field of conservation have led the partners to conclude that the field will support a new objects conservation program with a focus on metals conservation. Accordingly a graduate program in objects conservation with a special emphasis and expertise in metals conservation has been developed and we seek the support of the IMLS to launch this unique program in New England. The Higgins Armory Museum and WPI propose to present a series of three consecutive two weeklong summer conservation institutes in 2004,05 and 06.

These Metals Conservation Summer Institutes (MCSI) will enable the Higgins and WPI to demonstrate national leadership in the field of metals conservation and will lead the partnering organizations to identify key faculty and participants to assist in planning a strong foundation for a future graduate program in objects conservation. This proposal therefore has clear objectives and provides all the IMLS grant requirements, including: sustainability, strong management, qualified personnel, wide dissemination strategies, design reflecting actual demand and need in the field, project evaluation and a plan for adaptability.

Background of Partners: WPI is a national leader in metals research and is home to the Metals Processing Institute (MPI) a research leader in the field of metals properties for industrial application. The Higgins Armory Museum (AAM accredited) has one of the largest collections of historical and archeological metals in the nation, famous primarily for its extraordinary collections of arms and armor. WPI, MPI and the Higgins Armory collectively offer unique laboratory facilities and research expertise that will guarantee the national significance and the quality of this project.

Both partnering institutions are venerable Worcester Institutions. The two organizations are linked by both history and established partnerships. The Higgins family was instrumental in the establishment of Worcester's Polytechnic Institute at the turn of the century. The founder of the Higgins Armory Museum, John Woodman Higgins, like his father and grandfather before him, attended the University and earned his engineering degree from WPI. To further cement our existing partnerships, the two organizations propose a Metals Conservation Summer Institute.

The Institutions as experienced partners: History of the partnership between the Higgins Armory Museum and WPI: In 1999 the Higgins and WPI established an endowed and shared curator/professor position named after a long time WPI and Higgins Armory Museum trustee Paul S. Morgan. This joint faculty curator position was established with a one million dollar endowment shared by the two institutions to provide part of the salary for this joint venture. The Paul S. Morgan Curator teaches in the WPI Humanities and Arts Department and currently oversees the WPI student-based projects at the Museum. The results of these projects may be viewed on our web site (www.higgins.org) in the collections/ research/virtual exhibitions section. The research projects include a complete inventory of our Japanese weapons holdings Arms and Armor of Japan, lab-based materials analysis of 13th to 15th century swords Material Culture of Late Medieval Europe, and an analysis of a 16th century German master's hand-and-a-half sword techniques in The Long sword Techniques of Joachim Meyer (1570).

History of the Development of the Conservation Collaboration: Over the past few years, the Higgins and WPI have been discussing opportunities to leverage the strengths of each institution based on our respective and unique competencies. Given WPI's expertise and national reputation in engineering, materials science and engineering research, and the Metal Processing Institute (the largest industry-university alliance in North America) and the Higgins' unique collections of arms and armor, a metals conservation program has been viewed as an opportunity to focus the interests of both institutions into one cohesive collaborative program for 21st century learners.

Goals of the partnership: In 2000 the President of WPI, Dr. Edward Parrish, and the President of the Board of Trustees of the Higgins Armory Museum, Mr. Steven Pitcher, established a

Steering Committee to develop this new partnership and establish clear goals. The intention from the start was to create an enduring collaboration between the two institutions leading to the establishment of a graduate degree in objects conservation with a focus on metals. The

Committee identified a need in the field for a regular summer conservation institute as both a first step and later as an adjunct to a graduate program.

By establishing a Metals Conservation Summer Institute (MCSI) we are initiating the first step of this metals conservation plan. The inaugural course will be held during the summer of 2004, with the intent that this will be the keystone for a cohesive and enduring partnership between the Higgins Armory Museum and WPI; an initiative that capitalizes on the historical legacy of both institutions. The MCSI has been developed as a pilot program to test and assess the needs in the field from experts and scholars; to harness joint facilities and expertise; to organize a nationally significant service to the field; and to develop a new conservation curriculum. The institutions anticipate offering two additional Summer Institutes, in 2005 and 2006 under this grant and to continue with the summer program following that in conjunction with the established graduate program in conservation. We expect that by 2007 a graduate degree program will be established at WPI reflecting the needs in the field of objects conservation with a strong reputation for metals properties expertise. The institutions anticipate that the experiences gathered at the MCSI program will form a solid foundation for a new graduate degree program.

Process and Structure of the Partnership: The Steering Committee's responsibility was to: identify similar programs worldwide; ascertain the extent and impact of competition in this field; measure need; identify experts in metals conservation; ask these experts to evaluate the program and assist in building the curriculum; identify targeted markets; to establish support within the WPI faculty and Higgins staff, ascertaining their willingness to participate and eventually to teach in the course; assess existing and required physical and technological facilities; and establish a visiting faculty of national and international stars in the field so that the program would attract attention and establish prestige from the start.

The Steering Committee invited Henry Lie, Director Straus Center for Conservation and Technical Studies, of Harvard University Art Museums to discuss the plan. Prof. Diran Apelian (Howmet Professor of Engineering and Director of WPI's MPI) worked closely with Prof.

Heather Lechtman of MIT to assess need in the field. Numerous conversations took place with scholars and practitioners in the field of objects and metals conservation to secure their advice and participation in the program, During these conversations Dr. David Scott, Senior Scientist and Head of Getty Conservation Institute Museum Research Laboratory agreed to join both the curriculum advisory group and to teach in 2004.

Discussions also took place with the conservation departments at the Worcester Art Museum, Harvard Art Museums, The Getty and the Metropolitan Museum NYC and with other cultural institutions in and around Worcester, establishing the full cooperation of institutions in the region. As a result of these discussions external hands-on laboratory programs will take place in the labs of the Worcester Art Museum and other laboratory facilities in the region (Museums of Harvard and MIT).

Discussions within WPI identified faculty participants and secured the support of the Humanities, Technology, Engineering and Design Departments. The Metals Processing Institute at WPI agreed to make their facilities available, including the metals characterization laboratory, metallographic facilities, microscopy laboratories, corrosion laboratory, and access to high-tech equipment. The University Relations Office and WPI's Communications Department will handle marketing, materials production, mailing, registration, accommodation, summer institute organizational support (entertainment, tours etc) as well as laboratory and classroom access.

The goals of the Steering Committee were accomplished in 18 meetings over the past 24 months. The Committee consisted of:
Representing WPI:

Prof. Diran Apelian, Howmet Professor of Engineering, Director of Metals Processing Institute Dr. Gretar Tryggvason, Head of Mechanical Engineering and Design Dr. Patrick Quinn, Head of Humanities and Arts Department

Dr. Malcolm Parkinson, Professor, Humanities and Arts Department Prof. Lance Shachterly, Office of the President
Dr. Jeffrey Forgeng, Professor, Humanities and Arts Department Dr. Jack Carney, Provost
Mr. Steve Hebert, Vice President of Administration Mr. John Heyl, Vice President for Development
Ms. Linda Looft, Director External and Government Affairs Dr. Tom Lynch, Vice President for Information Technology

From Higgins Armory Museum:

Mr. Steven Pitcher, President Board of Trustees Dr. Jeffrey Forgeng, Paul S. Morgan Curator Mr. Kent dur Russell, Executive Director

Ms. Josephine Jacobs, Assistant Curator of Arms and Armor

Ms. Christina McGovern, Director for Development and External Relations

External Curriculum Advisers:

Prof. Heather Lechtman, MIT Historical Metals Program

Dr. Henry Lie, Harvard Art Museums, Conservation Department

Mr. Walter Karcheski, Owsly Frasier-Brown Historic Arms Museum, Louisville KT Mr. Lawrence Becker, Worcester Art Museum Conservation Department

Mr. Tony Sigel, Associate Curator of Objects and Sculpture, Strauss Center for Conservation Harvard University

Dr. Matthias Pfaffenbichler, Director of Arms and Armor Dept. Kunsthistorisches Museum Vienna, Higgins Armory Museum

International Collections Committee at Large Mr. Stuart W. Pyhrr, Arthur Ochs Sulzberger Curator of Arms and Armor

Dr. David Scott, Senior Scientist head of GCI lab, Getty Museum, UCLA Archeological Conservation, Metals Conservation program

National Impact:

Students, participants and faculty will attend from across the nation and internationally. Following the course, findings will be published on the dedicated MCSI web site hosted by WPI and thus allowing a national audience to log on to the participant's findings across the nation to ensure the program has a far reaching and broad impact in the field including museum and university based conservation activities across the nation. WPI's Dr. Lynch, head of the Information Technology Department, will maintain this web site.

The Higgins Armory Museum will offer unique advantages to participants not available anywhere else in the country .Students will have access to the collections of the Higgins Armory Museum that span from early archeological examples of weapons from Central Europe, Asia and Egypt from B.C.E. 3,000 to the 18th century. The collections offer a virtually complete inventory of manufactured metal objects over a 5,000 year history of technology. The Higgins Armory Museum is the only solely dedicated arms and armor museum in the Hemisphere. It's collections and research are internationally respected and recognized. Participants in the Institute will use the Higgins' conservation laboratory facilities as well as those at WPI, the Metals Processing Institute and the Worcester Art Museum. Students, collectors and experts will handle historical metals objects from Higgins' study collections. In addition, this program will:

- Provide a program that neither institution alone could undertake
- Develop ever-increasingly strong ties between WPI and the Higgins Armory Museum .Utilize the partner's unique expertise and facilities
- Will provide access to the extraordinary range of laboratory facilities at WPI to students in the field of conservation
- Provide specialized conservation training to the field
- Disseminate information in the field of metals conservation to multiple constituencies through Access Grid, dedicated web site and through the publications of participants and faculty
- Provide distance learning opportunities and out-reach to national audiences through WPI's Access Grid system and a dedicated web site for the program
- Encourage dialogue between experts in a scholarly environment
- Will provide unique access to one of the great arms and armor collections in the world .Will expose students to a major collection of archeological and historical metals objects
- Will create a conservation program to benefit the urgent needs for conservation of objects of the Higgins Armory Museum's collections

- Provide a nationally and internationally recognized faculty of experts in the field

Given the enormous assets of WPI and their established experience in marketing and presenting scholarly symposia and conference programs such as this, the risk of this program is minimal.

Adaptability

This project will create a working model for successful adaptation by other partnerships and will produce far-reaching results. The format and results of this project will be made available to interested parties through web supported dissemination and publications. Information will be disseminated through WPI's powerful Information Technology structure that includes a wide band internet-hub, an Access Grid, distance learning through WPI's conferencing facilities and technology program, and WPI's expertise in delivering distance learning at satellite site facilities across the state of Massachusetts and overseas. Thus the program will have a national learning impact and enable the information to be integrated into the professional practice of the participants.

Both the Higgins Armory Museum and WPI are vitally interested in creating a functioning working model for this program. We are aware that strong partnerships that include endowed jointly held positions (the Paul S. Morgan Curator/Professor) and programs such as ours (MCSI) are difficult to forge and we welcome the opportunity to share our experiences in building incrementally this strong and enduring collaboration between a museum and a university. The Summer Metals Conservation Institute is built upon an established and tested partnership. It is a model for other collaborations and one that points to the value in such collaborations that bring together institutional assets. These assets, which alone are insufficient to deliver a full product or program, are when taken as a whole equal to more than the sum of their parts.

Future programs will involve developing a broader range of participants and faculty, with greater use of distance learning technical support facilities, and will have an increasing impact on the field. As this happens we expect to share our knowledge, build the knowledge of metals conservation and furthermore disseminate information about this project to encourage others to build partnerships.

Design

The project has been designed following systematic assessments of submitted ideas and in-depth research with numerous advisors and leaders in the field of conservation across the nation. The meticulous planning and research process leading the two organizations to this proposal has ensured that we understand the current issues in the field of metals conservation and are addressing a real need in our community of scholars, students, museum-based conservators, academics and practitioners.

The prestigious advisory group ensures that the program reflects existing and emerging standards and best technical practices. Programming addresses real needs in the field, to be fulfilled in a most efficient manner by exploiting the existing facilities and assets of the two partnering institutions. These institutions have defined clear goals for the program and strategies to sustain it over a period of time. The program will build in-depth knowledge in the field of objects conservation and specifically the challenges of metals conservation, with far-reaching effects in the field.

The project between these two national institutions reflects an identified and current need in the field for metals conservation programs. The MCSI at Higgins Armory/WPI brings together, for the first time, the specific technical expertise, specialized physical facilities, and laboratories needed for such a program. It also brings together important physical, technical and intellectual assets, as well as securing contributions from other cultural institutions in the region.

Formal and informal discussions with experts across the nation have identified a need for a metals conservation program and identified its target audiences. We have designed a marketing strategy to attract broad participation from: professionals in private practice, and museums and university settings; faculty; collectors; students in object conservation programs wishing to acquire a deeper knowledge of the specialized needs of metals objects; and students wishing to

experience a hands-on program with the opportunity to handle historical metals objects in a laboratory setting. The goals of the program are directly based on needs of metals and objects conservators and students.

This collaboration between the Museum and WPI is an extraordinarily effective and efficient use of excellent facilities and collective expertise. The superb physical facilities of the partnering organizations allow for the opportunity to handle historical metal objects from the Higgins Armory Museum, transforming this program from the traditional theoretical format into a hands-on practical framework, therefore guaranteeing the unique position this Metals Conservation Summer Institute will establish for itself.

Systemic change will occur both at the Higgins Armory Museum and WPI. The Higgins will have access to the state of the art MPI laboratory facilities at WPI. WPI will have access to the Museum's collections for study and research. The Higgins has considerable conservation needs and this relationship will enable the Museum and the University to develop lab programs to address those needs. Best practices will not only be illustrated and taught by the national faculty in these courses, but best practices will be integrated into the Higgins Armory Museum's conservation programs and also into the programs of the participating institutions. This program will have high impact in the field, with the knowledge of best practices being widely disseminated through the program.

The design of MCSI is based on a number of exciting university sponsored professional development summer institutes, however the curriculum that has been developed by the participating and advisory faculty provides the broadest possible program in metals conservation. The design of this program was built around existing knowledge of professional development courses and institutes, with curriculum developed by experts in the field of metals conservation. The impact on the field of objects conservation and the dissemination of knowledge in the museum, university and amongst practitioners will be most valuable and unobtainable at this level elsewhere currently.

Solid academic thinking has created a challenging and unique curriculum, experience guides the two institutions in ensuring that a strong and focused marketing plan will reach audiences across the country to encourage participation, contacts in the field have yielded a nationally recognizable faculty to teach the program with important student contacts across the nation.

The Institute builds on the strengths of the University's and Museum's staff, collections, facilities and existing programs. The core teaching resources are available from the faculty of WPI and the Higgins Armory Museum's staffs and have been amplified by the participation of some of the most nationally and internationally respected practitioners in the field of metals and objects conservation. This core group is uniquely qualified to form a base for this program and create the vision for the 21st century learner to continue the journey of lifelong learning.

The national/international faculty has been assembled to amplify these strength and to address specific areas of expertise not covered by either Museum or WPI staff. This prestigious external faculty includes leaders in the field of metal conservation, historic metals analysis and practice. Each and every person we approached was enthusiastic to participate and presented their proposed curriculum that was in turn integrated into the full MCSI program.

The Curriculum:

A) Conservation and Introduction

Introduction: History of metals conservation (Edward A. Hunter, Metropolitan Museum of Art NYC, Walter Karcheski Owsley Frasier Brown Museum KT)

Metals: History of Technology (Jeffrey Forgeng, Paul S. Morgan Curator and Dr. Patrick Quinn, Head Humanities and Department)

Metals -an overview of conservation issues (Henry Lie, Harvard and David Scott, Getty)

B) Metallurgy

Origins of Metals -an overview (Gretar Tryggvason, Mechanical Engineering WPI)

Processing and Manufacture of Ferrous Metals: *a historical perspective* (Prof Malcolm Parkinson WPI Humanities and Arts Department)

Processing and manufacture of ferrous metals: *technical perspective* (Diran Apelian,

MPI)

Principles of Metallurgy: *Processing-Structure-Properties* (Diran Apelian, MPI)

Alloy Systems/ Phase Diagrams (Diran Apelian, MPI)

Metal Characterization (Dr. Sumanth Shankar , MPI)

Metallographic techniques

optical/ scanning microscopy/ and other advanced methods

evaluation of mechanical properties (destructive and non-destructive) electrical/thermal/ other properties

Metal Degradation: *Causes and Prevention*

Degradation processes (Diran Apelian, MPI)

Corrosion of iron overview (David Scott)

Metallurgy of iron and steel

Identifying characteristics and properties of different materials: gray cast, Wootz and Deccan steel, Anglo Saxon blade sections, japons steel; copper and bronze and alloys. (David Scott, Getty Museum)

Corrosion of surface colorants and patinations (Henry Lie, Harvard)

Case Studies:

A: A look at the Higgins Armory Museum collections issues (Jeffery Forgeng, Higgins Armory Museum Paul S. Morgan Curator)

B: Archeological conservation issues at the Getter Art Museum (David Scott, Getty)

C: Surface Decoration problems (Lawrence Becker, Worcester Art Museum and Matthias Pfaffinbickler, Vienna)

Metal characterization laboratory:

Hands on lab at MPI/WPI, Worcester Art Museum, and The Higgins Armory Museum Conservation Laboratory. (Lawrence Becker, Chief Conservator Worcester Art Museum, et al.)

Metal casting laboratory: hands on lab at MPI/WPI (Prof Diran Apelian)

Management

- WPI has experience in presenting similar practicum and conference style credit summer institute programs.
- WPI is a major national university: registration facilities, design and printing of materials, mailing and dissemination services, identification and contact of participants, marketing, dorm and eating facilities, labs and classrooms, entertainment programs will be coordinated by WPI administrative staff.
- Both institutions offer strong financial management support and experience-
- Access Grid at WPI, international conferencing facility (Tom Lynch, head of IT services, see resume) will be provided at the campus
- WPI Web site support for external teaching
- Web support for program information and on-line registration
- The two institutions have excellent facilities and equipment: state of the art material science and analysis labs; X ray and properties analysis equipment classrooms; resident/refectory facilities; research libraries
- The Higgins Armory Museum is an AAM accredited institution celebrating its 75th anniversary this year. The Museum has the capabilities to manage this project and has a long-term partnership and program collaboration experience with WPI.

Budget

Budget has been developed in partnership with WPI and the faculty team. It encompasses every expense from start-up, planning, and implementation to outcome evaluation. WPI's Finance, Administration and Development Departments have developed and presented numerous summer institutes and has extensive experience in program and budget development in this area. We feel certain that the budget directly reflects the goals of the project

Contributions

The budget reflects the trust and complete cooperation and commitment both institutions have to the project. Both institutions show the willingness to put forward in kind contributions as well as cash. With additional support from IMLS the institutions contributions will enable the MCSI to become a reality.

Personnel

Key teaching personnel resumes are attached and will demonstrate the qualifications and the national character of the assembled team to implement this program. All participants have advanced degrees and/or practical experience in their field of expertise.

WPI/MPI Faculty participation:

- Prof. Diran Apelian, Howmet Professor of Mechanical Engineering, director of Metals Processing Institute WPI
- Dr. Sumanth Shankar, MPI .
- Dr. Gretar Tryggvason, Head Engineering and Design Department WPI
- Dr. Patrick Quinn, Head Humanities and Department WPI
- Dr. Malcolm Parkinson, Professor Humanities and Arts Department WPI .Dr. Jeffrey Forgeng, Professor Humanities and Arts Department WPI .Dr. Thomas Lynch, VP for Information Technology WPI Higgins staff participation:
- Dr. Jeffrey Forgeng, Paul S. Morgan Curator
- Mr. William McMillan, Conservation technician
- Ms. Josephine Jacobs, Assistant Curator of Arms and Armor Visiting faculty participation:
- Mr. Lawrence Becker, Head Objects Conservator Worcester Art Museum Conservation Department
- Dr. Henry Lie, Head Conservation Program, Harvard University Art Museums, Strauss Center for Conservation Harvard University
- Mr. Walter Karcheski, Chief Curator of Arms and Armor, Owsley Brown Museum, Louisville KY
- Dr. David Scott, Senior Scientist Head of GCI lab, Getty Museum, UCLA Archeological Conservation, Metals Conservation program
- Dr. Matthias Pfaffenbichler, Director of Arms and Armor Dept. Kunsthistorisches Museum Vienna, Higgins International Collections Committee at Large
- Mr. Edward A. Hunter, Assistant Conservator Department of Arms and Armor Metropolitan Museum of Art, NYC

Project Evaluation

The project has been carefully constructed to ensure quality assessment with outcome goals being clearly articulated. Benchmarks will evaluate the incremental steps and success of this project. Exit and outcome evaluations will follow each of the class and lab presentations and at the end of the program for both the participants and faculty .The curriculum has outcome expectations from the faculty: the individual instructors have developed the instruction objectives. Evaluation tools include papers demonstrating conceptual understanding of students, tests and quizzes on specific technical data, grading, and an award of a certificate from WPI for participation.

Students are expected to gain competence in a practical area of conservation, understanding and competence in the use of state of the art lab equipment for metals analysis, basic understanding of metals science and properties. This course is intended to be a "value proposition" for the participants; the presenters understand that the participants expect to receive practical training enhancing the participants' own competence and to increase their knowledge in this field which will be shared with their perspective institutions. A certificate will be awarded at completion.

The WPI evaluation team will develop questionnaires, results will be tabulated and processed by the Business Management Department by a special student Initial Qualifying Project (IQP) an undergraduate qualifying requirement program at WPI. WPI will track numbers of visitors to the designated MCSI web site as one of the many factors in calculating national impact.

Dissemination

The MCSI will be marketed broadly to: objects and metals conservators, objects curators, decorative art and generalists curators, collectors, academics, college and museum-based conservation programs, private practice conservators and student conservators, faculty in science and museum studies, and conservation programs across the country and internationally. During the program we will rely on WPI's extraordinary distance learning technology and distribution systems to disseminate information. All program information will be available on the

institution's web sites and available in hard copy. Disseminated information will include digests of the presentations, the curriculum, laboratory findings and data, statistics, faculty biographies, lists of participants, demographics of participants, and abstracts from the evaluations.

Information about the history and structure of the partnership will also be available to encourage adaptation of this model. Video transcripts will be made available from the Access Grid presentations. Special marketing materials will be produced to promote the program.

- Brochure: mailing lists target participants, international distribution
- Leaflet/flyer to post of faculty notice boards etc with tear-off application forms
- Access Grid WPI: The Access Grid supports large-scale meetings, collaborative; sessions, tutorials and training. The Access Grid design is a group-to-group communication (thus differing from desktop to desktop tools that focus on individual communication). The WPI access Grid consists of a multi media display, interactive environment, inter face with grid middleware and visualization environment (a large scale system producing a tiled stereo display generated by eight node cluster of commodity PCs which operate 8 high resolution monitors).
- Web sites of WPI and Higgins with down-loads for hard copy information

Sustainability

The benefits of this project will have an enduring impact on the two participating institutions. WPI will implement a graduate degree program in conservation; the Higgins will develop a conservation laboratory program addressing the urgent need it has for its own collections over the long term.

By identifying national participants and faculty this project builds on a national network for metals conservation projects around the nation. These relationships will endure to benefit the institutions and the program itself into the future. As students and faculty return to their respective institutions they will bring back valuable specialized knowledge. This is a unique opportunity for an experiential professional development program. This knowledge will filter through to institutions and to the field over time. By involving national organizations (MIT, Worcester Art Museum, Metal Processing Institute, Harvard Art Museums, The Getty Center Museum, Metropolitan Museum of Art etc.) the program has assembled a prestigious faculty and at the same time it has also started a professional dialogue and has commenced disseminating information across the nation.