



Academic Partnerships Program Fiscal Year 2017 Proposal Solicitation

Objective

LMI seeks to conduct sponsored research with university partners that supports LMI's mission of providing independent analysis and practical solutions to the challenges facing the federal government. The objective of this FY17 University Proposal Solicitation is to receive research proposals that investigate topics of critical interest to LMI and its federal customers.

About LMI

LMI is a not-for-profit strategic consulting firm serving the federal government for over 50 years. Our combination of broad perspective, deep analytical skill, and a public-service mission, enables LMI to offer practical—and often original and unconventional—solutions to enable government managers to attain their organization's objectives.

Public sector organizations value our not-for-profit status services in logistics, acquisition and financial management, infrastructure management, information management, organizational improvement, and policy and program support. We have comprehensive experience in the defense, intelligence, homeland security, health care, and energy and environment markets.

To advance our public-service mission, LMI reinvests a portion of its revenue into self-directed research and development efforts. LMI Research Institute (LRI) manages these efforts, sponsoring millions of dollars annually in internal and sponsored research. As part of its outreach efforts, the LRI has a formal Academic Partnerships Program that leverages the expertise and research capabilities of leading universities with LMI's own innovation program. The program consists of this solicitation for university proposals as well as the annual LMI Research Institute Government-University Forum.

Proposal evaluations

Proposals will be evaluated on the thoroughness of their approach and the innovative techniques used to address the research question(s). More information regarding evaluation criteria can be found on page 9 of this solicitation.

FY17 Research Topics

LMI is interested in funding university research in response to the following topics. Each topic contains multiple research questions; responses may attempt to address all, one, or a combination of the questions.

Academic Partnerships Program Fiscal Year 2017 Proposal Solicitation

Human Genomic Data

Genomics has taken on a key role in the fields of medicine and personalized patient care. Advances in genome sequencing, and the data it creates, have facilitated its use in a variety of ways, ranging from pharmacogenomics (the study of how genes affect a person's response to drugs) to the creation of smartphone applications that analyze users' genomic data to make dietary and exercise recommendations. The increased accessibility of genomic data brings great promise for preventive and personalized medicine. It also raises many questions around data collection, storage, sharing, and use, as well as the extent to which privacy and ethics standards should be established.

- What are the important privacy issues associated with human genomic information?
- How is the private industry collecting, using, and managing genomic information for use in “direct to consumer” genetic testing and smartphone apps for wearables (e.g., fitness trackers)?
- What protections are in place or should be in place, as health care and related medical organizations collect, use, and manage genomic information and then share the data with their peers for research studies?
- What are the current privacy and interoperability standards in use to protect patient data and information? How do they meet, and/or fall short of meeting, the needs for protecting genomic data and patient privacy?
- What are, or could be, the uses, implications, and benefits for patients, employers, and insurance companies in using genomic data for personalized treatment and assessing risk?
- With genomics expected to generate somewhere between 2 and 40 exabytes of data per year within the next decade, what will be the data storage and management implications? What will be necessary for storing and managing these large data sets?

Medicare Data Sharing for Performance Measurement (Qualified Entity Program)

Section 10332 of the Affordable Care Act amends section 1874 of the Social Security Act (the Act) by adding a new subsection (e) requiring standardized extracts of Medicare claims data under parts A, B, and D to be made available to “qualified entities” for the evaluation of the performance of providers and suppliers. Qualified entities may use the information obtained under section 1874(e) of the Act to evaluate the performance of providers and suppliers, and to generate public reports regarding such performance. CMS believes the sharing of Medicare data with qualified entities through this program and the resulting reports produced by qualified entities will be an important driver of improving quality and reducing costs in Medicare, as well as for the health care system in general.

Academic Partnerships Program Fiscal Year 2017 Proposal Solicitation

Potential qualified entities that wish to request data under this provision must submit an application that includes, among other things, a description of the methodologies that the applicant proposes to use to evaluate the performance of providers and suppliers in the geographic area(s) they select. Once certified, qualified entities:

- enter into a Data Use Agreement committing the organization to the highest levels of data security and privacy protection;
- pay a fee equal to the cost of making the data available;
- receive data for one or more specified geographic areas;

Additionally, CMS believes this program will increase the transparency of provider and supplier performance, and provide beneficiaries access to information that will help them make more informed decisions about their health care.

- What potential methodologies exist to evaluate the performance of providers and suppliers?
- What methods can be used to combine Medicare claims data with data sources from outside Medicare?
- What valid and reliable measures can be used to evaluate the performance of providers and suppliers?
- What is the best method for producing publically available reports on individual providers and suppliers in an aggregate format?

Supply Chain Risk Management (SCRM) – Improved Planning for Disruptions

Disruptions and risk to the supply chain can occur in a variety of different ways, such as cyber disruptions, counterfeit parts, loss of vendors, or port closings. These disruptions can be costly in terms of financial impacts, customer/warfighter service levels, and even loss of life and property. Depending on how mature an organization is at handling supply chain risks, disruptions can have short-term to long-term impacts if not handled immediately and effectively. Planning for disruptions and investing in a more resilient supply chain is critical in the ability to avoid disruptions or quickly and effectively resume operations; however, many organizations, in their efforts to be cost-effective and eliminate waste, are finding it difficult to allocate resources for planning and resilience. For large organizations such as the Department of Defense, how important are risk management resources and how do you assess the return on investment?

Strategy

- How can supply chain risk management become integrated into upstream (e.g. procurement) and downstream (e.g. maintenance) processes?

Academic Partnerships Program Fiscal Year 2017 Proposal Solicitation

- How do you collaborate with vendors, suppliers, and others to create a comprehensive supply chain risk management plan? What should that plan include?
- What are the key personnel needed for managing risk planning and what are the current training and certifications programs available? What are the roles of these persons in the broader supply chain organization?
- What are case studies that demonstrate the effectiveness of risk management approaches, especially in the area of counterfeit parts?

Identifying and Measuring Risk

- How are potential disruptions defined?
- How are the impacts of potential disruptions measured pre-event and post-event?
- How does adequately planning for disruptions improve resiliency?
- What are the key indicators of risk, especially in the area of the industrial supply base? What knowledge, intelligence, and information can be sought and tracked in advance of a disruption to serve as leading indicators?

Approaches and Tools

- What are industry best practices for supply chain risk management? What are government agencies doing similarly/differently and what should or could they be doing?
- What are current supply chain risk management practices and tools for anticipating, detecting, and responding to disruptions?
- What types of risk management strategies are organizations using to perform supply chain risk management?
- What technologies are being used to plan and react to supply chain risk and how have they improved resilience? What are the gains and shortfalls of the technologies?

Workspace Design and Organizational Effectiveness

Private and public sector organizations are making significant changes to the design and management of workspace to make it more open and collaborative. In doing so, many also seek to move to a more sustainable design that utilizes green technologies to enhance the internal environment, such as improving air quality and using more efficient lighting.

There have been numerous studies completed about the design of workspace and the impacts and benefits on individual welfare and productivity; however, there is not as much in the way of overall organizational effectiveness. Technology advancements and workspace design have contributed to the major shift in the social nature of work in terms of collaboration and teamwork, a trend expected to continue. As workspace becomes more open, greener, and more densified, there is a need to understand how workspace design improves and/or impedes the

Academic Partnerships Program Fiscal Year 2017 Proposal Solicitation

ability of teams/groups to complete their work and what it means for overall organizational effectiveness.

- What is teamwork as it relates to organizational effectiveness?
- How does teamwork contribute to the performance of an organization?
- How can teamwork be measured?
- What are the key factors in determining team success?
- How does workspace design affect teamwork/collaboration?
- What are the features of green building?
- What are workspace design options for green buildings?
- How does the design of team workspace compare to that of a non-green building?
- What are the benefits and tradeoffs of designing workspace that prioritizes teamwork?
- How does workspace design support and/or impede team/group level productivity?
- How has the increase in virtual collaboration technologies affected the design of team workspace?
- What metrics are, or should be, used to measure organizational effectiveness?
- How is organizational effectiveness measured in terms of workspace design changes?
- How do organizations determine optimal performance at the team/group level?

Organizational Leadership: Sparking Innovation and Fostering Diversity

Science, technology, engineering, and mathematics (STEM) underpin the government's ability to defend the nation and to assure the vitality of economic posterity in the U.S. The White House, National Science Foundation, Department of Education, and Department of Defense have placed high priority on attracting and educating diverse STEM talent while cultivating innovation (through funding solicitations and strategic and policy guidance) as a crucial investment for gaining competitive advantage and remaining a global technological leader. Diversity is a critical driver of excellence in research and innovation in STEM in the 21st century; the future of science depends upon diversity of thought that will strengthen the scientific infrastructure. A current area in need of academic research and scholarly literature is how organizational leaders can effectively foster innovation and gain broader, more diverse participation in innovation technical fields, such as STEM.

- How can organizations foster innovation in a way that is scalable?
- How can DoD leaders foster innovation in a technical workforce?
- How can DoD become more inclusive to attract and retain diverse STEM talent?
- Which elements of an organizational culture lead to broader inclusion? Which of these elements does DoD have as part of its culture and/or which should it have?

Academic Partnerships Program Fiscal Year 2017 Proposal Solicitation

- What are the key enablers for an organization to effectively attract a diverse workforce in technical fields?
- What are the educational and organizational best practices in driving innovation and diversity and how can DoD integrate those into its organizational model?
- What types of retention strategies effectively drive innovation among a technical workforce, such as scientists and engineers?

Internet of Things – Disconnected Things and Wireless Mesh Networks

On a macro level, the Internet of Things can be divided into three markets – "things" that are intimately involved in human activity –wearables, cell phones, and other interactive devices; "industrial" things, for example, sensors involved in industrial processes; and "disconnected things" that are not intimately involved in human activity, nor do they directly participate in an industrial process. Each of these markets has very different business models and communication requirements.

The markets centered around "disconnected things", whether pallets of emergency medical supplies being deployed to a remote location in an undeveloped country, the health and location of beef cattle in the open ranges of the western US, or the condition of wheel bearings on a railroad freight car, face numerous communications challenges. Part of the solution could be the deployment of "wireless sensor mesh networks," both for individual locations (a beef cattle ranch), or across an industry (all North American freight railroads). Questions about a possible solution include ownership and security of the data, frequency of collecting data, and providing reliable and continuous in dynamic environments.

- How can individuals or companies that own the devices ensure the data collected will remain private to them? What are the cost considerations? What are the different considerations for private and public networks?
- The ability of humans to have continuous visibility using cell phones has revolutionized society. What is the impact, and technical requirements, to provide continuous visibility to "disconnected things"? How could wireless sensor mesh economically provide that connectivity?
- Cell phone companies are pushing cellular technologies to track "disconnected things", but there are problems with power requirements and cellular coverage. Can wireless sensor mesh provide a lower cost and more reliable method of communications?
- Wireless mesh networks become more powerful as they incorporate more “disconnected things,” often belonging to multiple stakeholders, to improve connectivity. How can multiple stakeholders communicate over the same network while maintaining pseudonymity? What are the implications of exposing the identity of stakeholders, even if message remains hidden? What measures can be taken to ensure stakeholder receive only

Academic Partnerships Program Fiscal Year 2017 Proposal Solicitation

the traffic intended for them? What are best practices for properly managing privacy (e.g., validating stakeholders)?

- What is the potential for emerging wireless sensor mesh technologies to transition to being inexpensive and more broadly used? At what rate might this occur and what are likely to be the contributing factors? Consider the historical deployment of cellular phone technologies where early devices were large and expensive, and typically supported high value activities, which then, over a period of nearly 20 years, transitioned to inexpensive devices used by children for text messaging.
- As wireless sensor mesh network prices decline and security challenges are addressed, which markets will be the "early adopters"? In which markets will wireless sensor mesh face the challenges of being a "disruptive technology"?

Monetizing Cybersecurity Risk for Executive Decision Makers

C-suite executives, in both the public and private sectors, are beginning to recognize cybersecurity as an enterprise, risk management endeavor. Unfortunately, executive leadership still struggles to calculate the real mission/business costs of cybersecurity risks in a way that leads to more objective, real-time decisions. As executives continue to look for ways to utilize information technology to maximize business productivity and minimize spending, the ability to objectively monetize cyber risk is becoming a business imperative. Adding to the complexity is the challenge to monetize current and future risks related to aspects of the business that are more difficult to quantify. For instance, the impact of negative public relations after a breach or the potential cost of a hacker taking over a CEO's social media account and sending misleading or incorrect information. The following questions should be considered in the research:

- What existing methodologies most effectively support calculation of costs related to typical information technology (IT) operations (i.e., data center, server maintenance, network management, desktop systems, personally identifiable information (PII) record loss, etc.)?
- What types of information most effectively support a cost-based determination of enterprise risks related to negative cyber activities, such as system breaches, ongoing compromises/advanced persistent threat (APT), data theft/loss, system destruction, data destruction, data integrity compromise, etc.?
- What methodologies exist to objectively calculate the cost of different types of cybersecurity risks based on known or estimated costs of existing operational activities? For example, if the data center circuit outside the building is cut, what is the business cost associated with this lack of availability? What are the costs for put in place mitigating controls that can reduce or eliminate these risks?
- What methodologies/frameworks/decision matrices would you recommend to conduct this type of analysis?

Academic Partnerships Program Fiscal Year 2017 Proposal Solicitation

- What methodologies exist to quantify the potential one-time and/or ongoing cost of impacts to things like brand, reputation, and customer trust? What framework/activities would you recommend to create repeatable, quantifiable ways to measure such risks on a cost basis?
- What solutions (tools, applications, methodologies, etc.) are available in the market that support monetized risk analysis enterprise for enterprise decision-making? What are their respective strengths and weaknesses?

Enterprise Risk Management (ERM): Implementation in Federal Organizations

On July 15, 2016, the federal Office of Management and Budget released the updated Circular A-123, *Management's Responsibility for Enterprise Risk Management and Internal Control*. ERM is a new focus and has just been added to the circular for the purpose of integrating internal controls with organizational risk. Federal agencies are attempting to marshal resources and identify where in the organization the ERM champion, or leader, should reside. Some believe that to add gravitas and support enterprise-wide strategy and integration, ERM responsibility belongs at the executive leadership level, such as a chief risk officer, part of the chief financial officer's portfolio, or even the direct responsibility of the chief operating officer. Others believe a more bottom-up approach that includes a combination of program-level leadership and supporting personnel would be more effective. Federal government personnel are looking to the private sector for ideas and solutions, but those likely do not fit the federal mission-based model or take into account the differences in the drivers and risk appetites. Whatever model an agency implements, ERM should support leadership in making strategic decisions and in its oversight role of being a good fiduciary manager. The following questions should be considered in the research:

- Where in an organization should the ERM function reside for optimal effectiveness?
- In what ways could the model vary based on differing agency missions? Is there a way to categorize the mission type (e.g., law enforcement, grants and loans, etc.) that would be useful in developing a model for each of those categories?
- What are the barriers to implementing ERM within federal agencies? How could they be addressed?
- What types of internal or cultural assessments could be useful in readying federal agencies for implementation of ERM?
- What types of performance measures could be used to effectively measure ERM implementations and sustainment?
- What are the private and public sector ERM best practices that should be considered by federal agencies for adoption (taking into account mission, size, and breadth of programs)?
- How, if at all, would a data-driven model be effective in the federal government?

Academic Partnerships Program Fiscal Year 2017 Proposal Solicitation

Proposal Submission Requirements

Technical

Proposals are limited to three (3) pages (for the technical approach) and must include the following information:

- Description of the proposed research approach for the chosen topic, including but not limited to defining data requirements, discussing alternative approaches, etc.
- Mention of the specialized or complex facilities/equipment/software/solutions you have access to that may be exclusive and vital to this research effort.
- List of project deliverables; deliverables must include, but are not limited to, a final report and presentation to the LMI staff. If appropriate, a deliverable other than a report can be proposed (such as a process methodology, tool or application, etc.).
- Project timeline (1 October – 30 September is the funding period) with anticipated major milestones; more guidance on the timeline will be provided by the LMI project lead upon funding.
- Names of project team members – the project team can be comprised of faculty and undergraduate, graduate, doctoral students, and researchers from other universities needed for the research. Please note if any team members are not US citizens.
 - Name and a brief biography of the principal investigator (this section does not count toward page limit).
- Cost proposal outlining the costs associated with the project. See below for more information regarding what may or may not be included in cost – as stated, LMI does not pay for university overhead costs such as ODCs, travel, etc. The cost proposal does not count toward the 3-page limit.

Cost

The LRI intends to fund at least one project through this solicitation; however, the number of projects funded is unknown until the time of award – there could be multiple approaches to one topic, or one approach to each topic, or no approaches to one topic. Award is at the full discretion of the LRI based on the merits of the proposed research approach.

Historically, the LRI has funded individual projects in the range of \$30,000 to \$50,000; however, this amount should not be a limiting factor, as we will consider all proposals. If submitting a proposal for a multi-year project, please note each phase separately, and clearly identify the cost for Phase 1 (October 1, 2016 – September 30, 2017), as well as estimated costs for future phases. There is no guarantee that funding for subsequent phases will be approved in future fiscal year evaluations. The total budget for this year's solicitation may be spread over multiple projects.

Academic Partnerships Program Fiscal Year 2017 Proposal Solicitation

Due to LMI's not-for-profit status, it is LMI's policy not to pay for university overhead costs (ODCs, travel, etc.). All funding must go to the sponsored research.

Period of Performance

The period of performance is 1 October 2016 – 30 September 2017. Multi-year project submissions are allowed; however, there must be a defined deliverable at the conclusion of each fiscal year (LMI's fiscal year is October through September). The project scope should be noted in phases, with Phase 1 being the first fiscal year, Phase 2 the second fiscal year, and so on. The evaluation team will consider funding only Phase 1 of any multi-year proposal. Subsequent phases will be required to resubmit in following years and will be evaluated against the other submissions under consideration at that time.

Requirements for Proposal Submission

The purpose of the proposal is to explain the proposed research approach for the topic and outline deliverables. Each proposal submitted is limited to three (3) pages for the technical approach, a short biography of the principal investigator, and a cost proposal – please do not include links to other materials, as they will not be considered. If the proposal is selected for funding, an LMI project lead, the LMI Research Institute team, and the principal investigator will work together to create a well-defined statement of work (SOW).

Do not include confidential or proprietary information in the proposal—a non-disclosure agreement will be executed in the event that a proposal is selected for award.

LMI will evaluate a **maximum of three (3) proposals** per school. Proposals are due COB (5pm EDT) Tuesday, August 30, 2016. The proposal package must be submitted electronically to Donna Norfleet at LRI@lmi.org. Hard copy submissions will not be accepted.

Questions regarding the submission or review process should be directed to Donna Norfleet, Manager, LMI Research Institute, at 571-633-7889-7174 or LRI@lmi.org.

Evaluation and Award Process

LMI will review and evaluate all proposals that do not contain confidential or proprietary information. Proposals will be evaluated based on their innovative approach, technical merit, alignment with LMI's strategic interests in the topic areas detailed in this solicitation and to LMI's strategic direction, feasibility, and applicability to LMI and its clients. LMI reserves the right to

- a. award funding to one or more universities,
- b. cancel the proposal solicitation, and

Academic Partnerships Program Fiscal Year 2017 Proposal Solicitation

- c. conduct discussions and/or negotiations with any or all universities submitting proposals under this solicitation.

This Proposal Solicitation and any proposal submitted in response do not authorize universities submitting proposals to proceed with any work without written authorization from the LMI Research Institute’s Manager. Universities shall not construe this Solicitation or any response submitted as a commitment from LMI to pay any costs incurred in connection with preparing a proposal.

Timeline

The following table outlines the timeline for the FY17 Academic Partnerships Projects:

LMI Research Institute – Academic Partnerships Projects Timeline	
July 22	LMI Research Institute sends project topics to universities for response
August 30	University responses due to LMI Research Institute
September 16	LMI Research Institute notifies universities of funding decisions – feedback will be provided to both funded and unfunded projects
October 1	Contract start date; funding sent to university

Terms and Conditions

The following provisions and clauses apply to this Proposal Solicitation. These provisions and clauses shall be included in the award document and shall be considered when submitting a proposal. LMI prefers to retain ownership of the intellectual property developed under sponsored project(s); however, other intellectual property arrangements can be negotiated on a project by project basis.

In performing any activities reasonably related to a sponsored project, all parties shall comply with all applicable provisions of federal, state, and local laws, rules, executive orders, and regulations in effect at the time of such activities.

During the course of sponsored projects, universities may be given access to confidential or proprietary information, including, but not limited to, financial information and patient health records. Upon award, universities agree to execute any non-disclosure agreements necessary to protect the confidentiality of such information and to prevent improper disclosure of any portion thereof.