RFI-RQKM-2014-0022

INSTITUTES FOR MANUFACTURING INNOVATION
Request for Information (RFI)

1. Contracting Office Address
Department of the Air Force, Air Force Research Laboratory (AFRL) - Wright Research Site, AFRL/RQKMT, Area B, Bldg. 167, 2310 8th Street, Wright-Patterson AFB, OH, 45433-7801.

2. General Information
This is a Request for Information (RFI) only, as defined in FAR 15.201(e), to obtain information about pricing, delivery, capabilities, and other market information for planning purposes. This RFI is not a request for competitive proposals; therefore, responses to this notice are not considered offers and cannot be accepted by the Government to form a binding contract. Responses should include information identifying whether the responder's firm is a small or large business. The size standard is 500 employees. The NAICS code for this potential effort is 541712. Companies that respond will not be paid for the information submitted. No telephone calls will be accepted requesting a bid package or solicitation. There is no bid package or solicitation. All information received shall be safeguarded from unauthorized disclosure. Please do not submit any proprietary or classified information.

3. General Intent
The Department of Defense (DoD) wishes to consider input from Industry and Academia as part of an effort to select and scope the technology focus areas for future Institutes for Manufacturing Innovation (IMIs). These IMIs will be regionally centered Public Private Partnerships enabling the scale-up of advanced manufacturing technologies and processes with the goal of successful transition of existing science and technology into the marketplace for both Defense and commercial applications. Each Institute will be led by a not-for-profit organization and focus on one technology area. The Department is requesting responses which will assist in the selection of a technology focus area from those currently under consideration, based upon evidence of national security requirement, economic benefit, technical opportunity, relevance to industry, business case for sustainability, and workforce challenge.

The Technical Focus Areas currently under consideration are:

- Flexible Hybrid Electronics
- Photonics
- Engineered Nanomaterials

- Fiber and Textiles
- Electronic Packaging and Reliability
- Aerospace Composites

Manufacturing remains the essential core of the U.S. economy's innovation infrastructure and is critical to national defense. But a gap exists between R&D activities and the deployment of technological innovations in the domestic production of goods and this gap could have long-term negative consequences for the defense industrial base. As global competition to manufacture advanced products intensifies, the performance of the country's innovation ecosystems must improve. What is needed is for industry, academia, and government partners to leverage existing resources, collaborate, and co-invest to nurture manufacturing innovation and accelerate commercialization and defense productization. IMIs are now being established to fill this gap in the innovation infrastructure. As sustainable manufacturing hubs, IMIs will create, showcase and deploy new capabilities, new products, and new processes that can impact commercial and defense production. DoD has already established three of these Institutes, and is now in the process of selecting technology focus areas for a potential fourth and fifth Institute.

4. Background

The President of the United States has launched a major, new initiative focused on strengthening the innovation, performance, competitiveness, and job-creating power of U.S. manufacturing called the National Network for Manufacturing Innovation (NNMI). Key design tenets for the NNMI are captured within *National Network for Manufacturing Innovation: A Preliminary Design* a report issued by the White House National Science and Technology Council on Jan. 16, 2013 (http://www.manufacturing.gov/docs/NNMI_prelim_design.pdf). The NNMI is comprised of Institutes for Manufacturing Innovation (IMIs). The President has proposed up to 45 IMIs around the country. Congress is currently considering bills in both houses similar to the President's proposal. IMIs will bring together industry, academia (four- and two-year universities, community colleges, technical institutes, etc.), and federal and state agencies to accelerate innovation by investing in industrially-relevant manufacturing technologies with broad applications. This will provide the required innovation ecosystem to help bridge the gap between basic research and product development/fielding. It will provide shared assets to help companies, particularly small and medium enterprises, access cutting-edge capabilities and equipment and create an unparalleled environment to educate and train the workforce for advanced manufacturing implementation. Each Institute will have a specific technology or market focus and will serve as a regional hub of manufacturing excellence in that focus area, providing the critical infrastructure necessary to create a dynamic, highly collaborative environment spurring manufacturing technology innovations and technology transfer leading to production scale-up and commercialization. When established, each IMI will be a public-private partnership via a Cooperative Agreement and key part of the NNMI network of institutes.

In 2012, the President announced the launch of a pilot IMI using existing funding and authorities. This IMI, named America Makes: The National Additive Manufacturing Innovation Institute, was awarded in August 2012. While the full-scale NNMI initiative remains subject to congressional approval and funding, President Obama announced during the 2013 State of the Union Address that the DoD and DOE would stand up three additional Institutes in 2013, again using existing funding and authorities. Those institutes are: the Digital Manufacturing and Design Innovation (DMDI) Institute, the Lightweight and Modern Metals Manufacturing Innovation (LM3I) Institute, and the Next Generation Power Electronics National Manufacturing Innovation Institute. Information on each of these institutes can be found on the manufacturing.gov website.

The characteristics of an IMI as outlined in the *National Network for Manufacturing Innovation: A Preliminary Design* report:

- A regional hub of manufacturing excellence with national benefits that brings together industry, universities and community colleges, federal agencies, and states
- Led by a non-profit with the capacity to lead an industry-wide technology, workforce development, and infrastructure agenda.
- Invests in applied research in industrially relevant manufacturing technologies with broad applications that accelerates innovation and bridges the gap between basic research and product development (TRL/MRL 4-7) (Definitions of MRLs and TRLs can be found at http://dodmrl.com/)
- Provides shared infrastructure assets and knowledge to help companies, particularly small and medium enterprises , access cutting-edge capabilities and equipment
- Creates an unparalleled environment to educate and train students and workers in advanced manufacturing skills
- Is launched with federal funding typically in the range of $70M-$120M over a 5-7 year timeframe
- Leverages a minimum 1:1 non-federal co-investment
- Can be self-sustaining and fully independent of federal funds 5 to 7 years after launch

Building on the success of America Makes and the launch of three subsequent IMI's, the President has challenged the Federal Agencies to develop concepts for additional IMI's. The Defense-Wide Manufacturing Science and Technology (DMS&T) program, part of the OSD Manufacturing and Industrial Base Policy office, is seeking information to identify and formulate potential future requirements and investment strategies for two new DoD led, multi-agency supported, IMI's.

5. Description

The DMS&T Program invites responders to provide information on potential future IMI's. While IMI's are targeted to have a non-profit entity be the prime contractor, all responsible sources may submit information that shall be considered by the Government.

There are six technology focus areas currently under consideration for future DoD led IMI's:

A. Flexible Hybrid Electronics: One promising domestic alternative to the prevailing printed circuit board technology is offered by a converging group of mature and emerging technologies that are collectively known as Flexible Hybrid Electronics, or Flex-Hybrid. Early Flex-Hybrid concepts incorporate well-known silicon microelectronics and novel packaging approaches, together with thin film electronics, power sources, and sensors that are fabricated from a variety of conventional and emerging materials. Standard industry integration processes such as "pick and place" or bump-bonding must be combined with non-traditional techniques (such as thin film fabrication on plastic webs and printing of electroactive materials) in order to enable agile and low cost manufacturing. Industry is gearing up to apply recent R&D advances to extend the architecture, but manufacturing technologies and scale up maturity are required to get advanced products to market.

   A broad variety of relevant but disconnected research on Flex-Hybrid is currently underway in America's university, government, and corporate research laboratories. Flex-Hybrid encompasses the manufacturing technologies to integrate electronics and sensors into non-traditional packaging such as low-cost substrate or stretchable, paper-like stereo lithography processing. The target applications span specialized military and high volume commercial markets, including sensing, communications, power, health and medical systems, wearable electronics, distributed vehicle controls, and the increasingly discussed "internet of things." This country needs a targeted investment to link these efforts into a coherent program to ensure U.S. leadership in a scale-up manufacturing activity that is has tremendous importance.

   The commercial market for flexible hybrid electronics has nearly unlimited opportunities; beyond the flexible display industry there are logistics, heath monitoring, advertising, and automotive applications. Products would include embedded electronics in apparel and consumable items, temperature/shock/vibe sensors for perishable and fragile goods, smart labels, simple heart rate monitors, and complex non-invasive glucose monitors. Defense applications for flex-hybrid include complex human interfaces, sensor platforms for unattended sensing, structurally integrated apertures to reduce aerodynamic wind resistance and embedded fatigue load sensors to determine structural life expectancy.

B. Photonics: The term "photonics" refers specifically to technologies for generating, transmitting, modulating, filtering, processing, switching, amplifying, attenuating and detecting light. Photonics technologies encompass significant commercial industries and solutions for DoD unique applications. The diverse photonics industry has a number of manufacturing approaches where a public-private investment could rapidly accelerate the technology availability from TRL 4 to TRL 6/7 and enable a sustainable industry for commercial and DoD needs. A photonics IMI would address industrial base issues for photonics materials, such as infrared materials, nonlinear materials, low-dimensional materials, and engineered materials which are critical to our Nation's photonics ecosystem (production, DoD, research, etc....). A Photonics IMI could be structured to allow improvements in the cross-cutting disciplines of design, packaging, reliability and test to be applied across multiple technology topic areas leveraging common manufacturing approaches. Preference could be given to technology topic areas that are in late stage research and development, that may require some design/foundry efforts, but the bulk of the efforts are in the packaging, reliability and test disciplines, increasing the probability that the technology will mature and transition to DoD weapon systems and/or commercial platforms in 3-5 years and enabling the institute to be self-sustaining in the 5-7 year timeframe.

Although much research and development on photonics has been done in the U.S., it has been primarily carried out by large corporations developing and using proprietary processes for application-driven designs. Little coordination and cooperation has existed between companies. As a result, U.S.-based photonics research and development is faced with several disadvantages:
1) There is no common or generic component library or fabrication process. There are almost as many technologies as photonics companies.
2) For most potential new applications, the market is too small for payback of investments without cooperative development.

Photonic technologies are commonly used in the high speed transmission of signals in telecommunications and high-performance information-processing systems. In addition photonics technologies are used in high-performance information-processing systems and computing. Finally photonic technologies are commonly used in sensors and imagers.

C. Engineered Nanomaterials: Over the last ten years, nanotechnology research has shown great promise in applications ranging from electronics to pharmaceuticals to structures and membranes, but the scale-up and commercialization have lagged this research. During the past decade, federal funding of nanotechnology research under the National Nanotechnology Initiative (NNI) more than tripled from about $464 million a year to almost $1.5 billion a year while the total US investment in the technology reached over $20 billion. The 10-year period from 2001 to 2010 was characterized by NNI as the first foundational phase and focused on inter-disciplinary research at the nano-scale. This phase led to discoveries of new phenomena, properties and functions at the nano-scale, a library of components as building blocks for potential future applications, and improvement of existing products by incorporation of relatively simple nano-scale components and technologies. While this phase has created a substantial body of knowledge in nanotechnology, the number of products in the commercial marketplace that benefit from nanotechnology are still fairly limited. Product applications are typically emerging from small businesses with niche applications that have a higher tolerance for risk. Nano-engineered materials require consistent, repeatable processing, implementation and characterization of nano input materials which are not achievable today due to a lack of in-process measurement methods on the industrial scale, among other limitations. This limits nano-engineered materials and much of their implementation to batch-processing until the input materials and their incorporation into products can be reliably controlled through the scale-up process. Given the wealth of knowledge gained by large investment in basic research, there's tremendous opportunity for a national manufacturing institute to complete the development cycle by addressing the scale-up and qualification/certification challenges of manufacturing nano-engineered materials and unlock the vast potential of this technology for both the commercial marketplace and the DoD

D. Fiber and Textiles: Historically, U.S. dominance in textiles was spawned by manufacturing innovations. A similar class of innovations made in the context of next-generation fibers and smart multi-functional textile matrices will precipitate an industry response not unlike the last one. Textiles are vital for uniforms, protective and load-bearing equipment (ballistic/stab puncture/-environmental/physical trauma mitigation), personnel and cargo aerial precision delivery systems, novel structures for turbine and rotor hubs, protective shelters, primary and secondary airframe sectors, energy harvesting equipment, and a variety of other smart textile (integrated electronics) products that keep our service members protected, unburdened and empowered across the spectrum of operations, spanning conflict to peacekeeping. Maintaining the highest level of survivability, sustainability, mobility, combat effectiveness, and field quality of life for U.S. armed forces and homeland defenders is critical to our nation's security. Currently, the U.S. textile industry is in need of leap-ahead manufacturing capabilities to surpass global markets. The textile DoD market segment has demonstrated efficiencies with the private sector pertaining to automotive, aerospace, energy, sporting/adventure apparel, equipment, and medical applications. Recent textile technological advancements in academia and laboratory settings have realized multifunctional and intelligent demonstrators with limited product to market. Cost, scale-up challenges, and lack of prioritized design features, have drastically changed the available pool of incremental and disruptive technologies that the industry can harvest and place into production.

E. Electronic Packaging and Reliability: Most of the electronics technologies now designed into defense systems were not originally designed for the environmental and operating stresses required in aerospace or defense systems, which also typically require high reliability. The majority of defense system electronic part failures result from part or assembly packaging issues (packaging refers to fundamental bonding, interconnects and mechanical functions at the integrated chip and board level and not for shipping or transportation), including unintended material incompatibilities for defense applications and manufacturing process inconsistencies. In addition, global environmental regulations affect the materials allowed for electronics, resulting in the introduction of new solder and board/part level packaging materials that are characterized for high volume, low cost consumer applications. Concurrently, the industry is pursuing dramatic reductions in size, weight and power (SWaP) which can be gained through advanced packaging architectures such as System-in-Package, Wafer Level Packaging, Chip Stack MCM, or Through Silicon Vias (TSV). Further integration at the chip and die level is crucial to continue the progression of Moore's Law, which is simply based upon the size and number of transistors on a chip. This new trend, known as "More than Moore", will ultimately lead to high-density, multifunctional electronics.

   An Electronics Packaging and Reliability Institute would scale up manufacturing processes currently proven in labs or prototype facilities and intended for consumer electronics while ensuring that reliability was increased for use in the safety-critical sectors of aerospace, defense and transportation. The scope would include verifiable closed-loop design and development processes that have the capabilities necessary to provide a positive means of control of the key/critical parameters. The institute focus would include Integrated Circuit Packaging, manufacturing processes for reliable first level (die to package external connections) interconnects and circuit assembly, failure models for first and second level interconnects addressing Defense environmental and operational stresses, low temperature bonding with adhesives, thin film coatings, and of course system level co-design tools to transition leading practices upstream.

F. Aerospace Composites: Organic Matrix Composites (OMCs) have high strength, high stiffness, low density, corrosion resistance, and long fatigue life. They also have tailorable properties (including thermal expansion) and ability to form complex shapes. They are used for lowering the weight of structures in aircraft and space vehicles where heavier structures can become unaffordable because of fuel and mission viability concerns. For example, launch of every pound of mass costs about $8000 for low earth orbit and much higher for geostationary orbits (24,000 miles out). Over the last 30 years, OMCs have won a larger percentage of aircraft and satellite structures. For example only 2% of the F-15

E/F was comprised of OMCs. Currently over 24% of F-22 structure, over 41% of V-22 Osprey is made of composites. The missiles /launch vehicles have up to 5 meter diameter composite structures in service. NASA uses up to 10 meter diameter launch vehicles. In the civilian world, Boeing 787 is 80% composites by volume and 50% by weight.

CMCs can be thought of as lightweight substitutes for high temperature superalloys. They offer low density, high hardness and superior chemical and thermal resistance. Those qualities and the ability to tailor the properties in composites make CMCs very attractive in applications in jet and rocket engines exhaust systems and other “hot zones”. CMCs are expected to revolutionize the weight and performance of engines that currently rely on single crystal superalloys found in today’s most advanced engines. Other uses are in diverse fields such as satellites and in the power industry with projected use in nuclear channel boxes and Nuclear cladding in boiling water reactors programs (providing enhanced safety). They are also used in oil, gas, and chemical processing industries.

OMCs and CMCs have important roles in the defense and commercial markets and in many cases their use improves the specific fuel consumption in aircraft engines, significantly reducing fuel costs. They will also be key enabling materials in the DoD hypersonics program.

6. Information requested

A. Responders interested in any of the six described technology focus areas are asked to answer the following general questions for each of the selected focus areas:

- What evidence is there that this topic lends itself to being an IMI?
- What are the manufacturing challenges within the TRL/MRL 4-7 area for the technology that prevent or limit wider-scale adoption today and what are the opportunities for investment that would make a significant national impact?
- What evidence is there of critical technical mass for building upon an existing regional hub(s) of excellence to create a national center of expertise in the form of an IMI?
- What is the current state of U.S. manufacturing capability associated with this technology, particularly in comparison with global competitors, and what strategies may be required to ensure a successful domestic industrial base?
- Are there key areas of the technology for which the U.S. has a significant lead, and if so, what are they? Are there key areas of the technology for which the U.S. is trailing foreign capabilities by a significant margin, and if so, what are they?
- What are the domestic and the global markets for the technology? (please address defense as well as non-defense applications)

- Within one of the six technical areas mentioned above, is there a subset of the technology that you would focus the institute on in order to achieve market potential?
- What would be the potential business case/benefits as well as the national economic impact if an institute were launched in the technology area (i.e. jobs, gross domestic product, etc.)?
- What would be the potential impact on national security if an IMI were launched in the technology?
- What is the likelihood that the technology could generate at least $75M in cost share to at least match a similar government investment?
- What evidence would indicate that the institute could be self-sustaining (i.e., no need for federal sustainment funding) after 5-7 years?
- What is the likelihood that you would bid (as a prime or as a team member) on a future government solicitation to lead or be part of an institute in the technology?
- What workforce education or skills must be substantially developed to support successful transition to production in the U.S.?
- Is there evidence that this technology focus area is substantially defense unique, and if so, what opportunities for commercial breakthroughs are there that an Institute could help catalyze?
- What is the potential market failure or failures being addressed by this IMI?
- Why is the private sector not incentivized to address this manufacturing challenge itself?
- Is there evidence that this technology focus area is substantially defense unique, with associated opportunities for commercial breakthroughs that an Institute could help catalyze?
- What type of capital equipment is available to support an institute in this area, and where is it? If unavailable, what is needed and what degree of capitalization is required?
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B. For responders addressing Flexible Hybrid Electronics, please answer the following questions in addition to those in section 6. A.:

- Describe the key innovative manufacturing approaches required to scale up flex-hybrid electronics?
- Describe the required degree of vertical integration required to successfully “grow” a domestic manufacturing capability in flex-hybrid electronics.
- Describe near term (3-5 year) and mid-term (5-8 year) applications of Flex-Hybrid of such great value or utility that it would assure market success.
- Describe how the institute would best be structured: by technical process, application sector, commercial/defense, or another attribute.
- What degree of capitalization would be required for an integrated manufacturing capability? Do these assets exists? If so, where?

- To what degree would flex-hybrid technologies be compatible with existing foundries?
- Describe the level of commonality for flex-hybrid products in the commercial and defense sectors?
- Should the institute initially focus more on high-cost, low-volume products or low-cost, high-volume products?
- Would the institute model require a full, vertically integrated manufacturing facility?

C. For responders addressing Photonics, please answer the following questions in addition to those in section 6. A.:

- What products are 3-5 years out that could support both defense and commercial Photonics needs?
- What kinds of packaging and reliability issues are best addressed by a Photonics Institute?
- How should design, packaging, and foundry requirements be balanced in a Photonics Institute?
- What type of multi-design on wafer (e.g., MOSIS for ICs) model best supports a Photonics Institute?
- How might a domestic foundry-access component (e.g. OPSYS or IMEC-like) be an integral part of a Photonics Institute without comprising too large a component of the funding?
- What examples are there of prior manufacturing technology breakthroughs applied to photonic systems (e.g. novel tooling, pick and place, packaging and integration, or materials synthesis systems) that have had a positive impact and been adopted by the photonics industry? What might be new breakthroughs?
- Could a Photonics institute address biophotonics topics (e.g. advances in quantitative imaging, imaging through complex media validation of biomarkers and/or more efficient agricultural production? Are there cross-cutting biophotonics technologies that would also benefit a broader-focused Photonics Institute?
- Are there joint DoD and commercial products and interest with respect to faint to single photonics (optics and photonics technologies that operate at the faintest light levels)?
- How might an Institute for Photonics address improving and expanding sources for optical and photonics materials critical to domestic R&D (e.g. infrared, nonlinear, low-dimensional, and engineered materials)?
- What type of capital equipment is available (and where does it exist) or is needed in shared facilities to maximize the benefits of a Photonics Institute?
- What design tools (CAD) are available for Photonics Integrated Circuits? What is still needed to be developed?

- Should the institute focus on a single foundry platform (i.e. Silicon) or be expanded to allow for a diverse set of platforms (Silicon, III-V, PLC, etc.)? How might this institute be structured to best accomplish this?
- What foundries currently have well-developed or mature photonics processes?
- What foundries would be interested in being part of the Photonics Institute, and what foundries would not be interested?
- What educational components could be integral to a Photonics Institute? (For example, the EU supports PhD students in 1-week intensive courses to train them in state-of-the-art photonics design and development, as well as programs to expose them directly to advanced production technologies that are not available in universities).
- Could domestic photonics foundries offer access both to a common component library/design kit while maintaining additional advanced technologies unique to their foundry process?
- Who would be in charge of refining and making modifications to the design kit? Would control be part of the Photonics Institutes' responsibilities, or would it be under control of the foundries?

D. For responders addressing Engineered Nanomaterials, please answer the following questions in addition to those in section 6. A.:

- What would be the most appropriate areas for focus e.g. classes of material or suites of products providing maximum benefit to the strength of both defense capabilities and the national economy?
- What are the critical processing, manufacturing and product development issues associated with the recommended nanomaterial focus areas?
- What evidence is there that an IMI for Nanomaterials could work to assure the US remains at the forefront of nanomanufacturing?
- How would you envision an IMI focused on Nanomaterials could work with current government (e.g. DOE, NSF, and NIST) sponsored nanomaterials research centers to leverage funding and advance manufacturing science?
- What evidence is there that the supply chain for nanomaterials is robust enough to support the emergence of nanomanufacturing?
- What nanomaterial applications are ready for commercialization, what economic sectors do they support, and what is the potential size of the market for those products? Identify a potential product that can benefit from a nanomaterials IMI and describe the role an IMI would play in commercialization of that product or technology
- What will be the relationship between a nanomaterials IMI and other institutes? Will there be any synergies?
- How can an IMI facilitate an integrated framework where the end needs will govern the nanostructure and the nanostructure may drive the fabrication?
- What type of capital equipment is needed, is available or is available in shared facilities to stand up a Engineered Nanomaterials IMI?

E. For responders addressing Fiber and Textiles, please answer the following questions in addition to those in section 6. A.:

- Textile structural composites offer unique opportunities for the next generation of warfighters. However, domestic production in this specialty area has been shrinking. What evidence is there that the trend will reverse?
- What role can an IMI play in automating the production of near-net-shaped braided structural composites?
- How can an IMI encourage domestic production of fibers, especially ceramic fibers for which there is no reliable domestic source?
- How will a Textile IMI interact with other IMIs and Centers of Excellence (COEs) to leverage synergies?
- What type of capital equipment is needed, is available, or is available in shared facilities to stand up a Fiber and Textile Institute?

F. For responders addressing Electronic Packaging and Reliability, please answer the following questions in addition to those in section 6. A.:

- Describe the key innovative manufacturing technologies required to substantially increase electronics reliability.
- Describe how advanced electronics packaging manufacturing technologies would transition to production in the U.S. when the majority of current electronic manufacturing resides outside the country.
- Describe the degree of vertical integration within the institute that would be required to adequately pursue advanced electronics packaging.
- To what degree would foundry resources be needed by the institute?
- Describe aspects of electronics packaging where common requirements exist between Defense and commercial sectors.
- Explain how electronics manufacturing technologies developed within the institute would remain within the U.S. industrial base.
- For Aerospace and Defense applications, are tamper resistant / technology protection approaches compatible with most advanced packaging technologies?

G. For responders addressing Aerospace Composites, please answer the following questions in addition to those in section 6. A.:

- Describe how the institute would best be structured: by processes, classes of composites or products which will provide maximum benefit to national defense and economy with the available investment?
- What are the gaps and issues associated with Aerospace Composites?
- What are the other components of the ecosystem which will be needed to support the focus of the institute?
- Is there evidence to believe that the domestic supply chain will be robust enough to support the composites industry in the future?

- How will the DoD investment affect other investment in the composite area? Are there areas of synergy? How would you address those?
- Can this MRL 4-7 advanced manufacturing development be stated more broadly without losing potential impact?
- What type of capital equipment ($) is needed, is available or is available in shared facilities to stand up an Aerospace Composites IMI?
- How would an IMI in aerospace composites reconcile with NASA's Advanced Composite Project which is billed as a public-private partnership?

DISCLAIMER: This RFI is issued solely for information and planning purposes and does not constitute a solicitation. Responders to this RFI will have no competitive advantage in receiving any awards related to the submitted topic area. The information submitted in response to this RFI may be used to help the Government further define its requirements. If the Government develops a program that addresses any submitted or similar topic, the resulting procurement will address technology and business specific requirements as defined by the Government to achieve the required objectives.

7. Required Reponses

Responses to this RFI are limited to 25 double-spaced pages with one inch margins using standard letter-size 8½" x 11" paper. The page count includes any title page. The font for text should be Times New Roman 12-point or larger. Responses must be unclassified and should not contain company proprietary information. Please pay attention to any company templates that automatically create a "company proprietary" or similar type statement. Those must be removed from the response. Separate responses should be submitted for each technology area. Multiple responses from a firm are acceptable. Marketing information is NOT acceptable in the response. Endorsements from elected officials at the federal, state, and/or local level are NOT acceptable in the response.

8. Request for Clarification

A responder may request clarification, in writing, from the Contracting Office for any aspect of this RFI that is unclear, by sending an e-mail to:

Pamela.strader@us.af.mil

Any requests for clarification must be received no later than seven (7) business days prior to the close of this RFI in order to receive a timely response.

Technical questions regarding this RFI should be directed to Dr. John D. Russell, AFRL/RXM, (937) 904-4597 or john.russell.23@us.af.mil. In the event Dr. Russell is not available, you may contact Dr. Jennifer Fielding, AFRL/RXMS, (937) 904-4343 or jennifer.fielding@us.af.mil.

9. Submission of Documentation

Responses to this RFI are due to the Contracting Office identified below by 3:00 PM Local Time, 14 Jul 2014. Any late responses will NOT be reviewed. Responders shall provide one (1) electronic copy (in Microsoft Word) of their response on a CD or DVD. USBs will NOT be accepted. DO NOT send via email, and DO NOT send any hard copies. Please ensure your response does not have any markings stating the information is proprietary or it will not be considered. Submission of existing commercial documentation and product literature is NOT an acceptable response.

Documentation shall be delivered to the Contracting Office at the following address:

AFRL/RQKMT
ATTN: Pam Strader
E-mail: pamela.strader@us.af.mil
Telephone: (937) 656-9000

10. Additional Information

While IMIs are targeted to have a non-profit entity be the prime contractor, all responsible sources may submit information that shall be considered by the agency. All routine communications regarding this announcement should be directed to the contractual point of contact listed above. The Government may or may not use any responses to this RFI as a basis for a subsequent project. Any projects developed from the RFI responses may be the subject of a subsequent acquisition; any such subsequent acquisition will be posted in FedBizOpps.gov. Responses to this RFI will not be returned. The Government is under no obligation to acknowledge receipt of the information received, or provide feedback to respondents with respect to any information submitted under this RFI. No requests for a bid package or solicitation will be accepted; no bid package or solicitation exists. In order to protect the integrity of any possible future acquisition, no additional information will be provided and no appointments for presentations will be made in reference to this RFI.

11. Submission Checklist

- 25 pages including any title page
- 8 ½” x 11” paper

- One inch margins
- Times New Roman 12-point font or larger
- Unclassified
- No proprietary information or markings (failure to comply will disqualify the submission)
- No marketing information, commercial documentation, or product literature
- No endorsements from elected officials at the federal, state, and/or local level
- Microsoft Word format, NOT PDF!
- Submitted on a CD or DVD, NOT USB, NOT via email, NO hard copies
- Due date 3:00 PM Local Time, 14 July 2014 (Late responses will not be considered)