HR001119S0073 GRIT
Frequently Asked Questions (FAQs)
as of 7/16/19

14Q: Can the lengths of Phase 1 and 2 be shorter than the timeframe laid out in the BAA?

14A: Performers may propose an alternative schedule, but need to support how they will achieve performance goals in a reduced time frame.

13Q: TA-2 requires energies between 3 and 15 MeV. The World Health Organization (WHO) has placed a limit of 10 MeV for photons for food irradiation, which includes cargo scanning. Are you still seeking E>10 MeV for radiography and photofission with the expectation that WHO would extend the requirement to 15MeV? Or, is this for applications that do have this restriction?

13A: At this time there is no expectation that any organization will change established limits. However, there are relevant applications where energy limits do not apply.

12Q: The BAA specifies the units of the Intensity requirement as (ph/s) or photons per second – tables in page 7 and 8. Is it defined into 4pi? If not, please specify.

12A: This intensity is the average photon output available for applications of interest after any collimation or other optics.

11Q: Our technology allows producing gammas at 4.44 MeV and a group of lines at 6.1, 6.9, and 7.1 MeV. It is tunable in that it can selectively produce these two groups separately, turning them on and off as needed. This allows for dual-energy radiography with much better material discrimination when compared to linacs. Would this technology be considered under the GRIT TA2?

11A: See answer for question 10 regarding TA2.

10Q: For both TA1 and TA2, does the gamma energy need to be continuously selectable across the energy range of interest? Would a system that can produce several monoenergetic gamma lines spread across the energy range of interest, but with predefined, discrete energy levels that are not arbitrarily user tunable, be responsive?

10A: As described in Section I.E of the BAA, proposals must address energy tunability with respect to the desired applications:

> "Specific goals for the ability to change output gamma-ray energy over time are not specified. Performers must address energy tuneability necessary to support their intended applications and demonstrations. For TA1, this includes elemental imaging and isotope detection and assay. Very precise energy control is required for these applications and the proposed approaches should describe in detail their strategy for energy control and rates

at which energy can be changed. For TA2, high energy radiography and special nuclear materials detection via photofission require less stringent control of specific energies, but may require more rapid energy tuning. Proposals should discuss means of adjusting energies that would allow, for example, multi-energy radiography approaches."

9Q: Will multiple separate proposals from a single company be evaluated for each separate topic area, e.g. TA1, or is a company limited to a single proposal for each of the two topics, TA1 and TA2?

9A: Per Section 1.C of the BAA, proposers may propose to one or both technical areas, but separate proposals are required for each technical area. Combined proposals will not be accepted. Companies may submit more than one proposal to a technical area; however, companies wishing to submit multiple proposals to TA1, for example, should consider whether two distinct technical proposals are merited and should use the abstract phase (Section IV of the BAA) to receive more specific feedback.

8Q: While the GRIT BAA might implicitly seem to discourage bremsstrahlung sources, how would abstract and proposal evaluators view a SYSTEM approach that employs a bremsstrahlung basis, but in an unconventional way? That is, for TA2, our approach is based on a coordinated set of components; a tunable bremsstrahlung source; a special set of detectors and electronics; and an analysis algorithm that defines an object response in a narrow energy window. Would this be an acceptable basis for a proposal or would the evaluators judge such a proposal to be essentially non-responsive?

8A: Specific technical approaches are not prescribed. Per Section I.E of the BAA, the TA2 Phase 2 objective for bandwidth is 10% or better. This bandwidth should be achieved from the source itself and not through signal processing or analysis methods.

7Q: Are slides from Proposer's Day available for viewing?

7A: The GRIT Proposer's Day webinar slides are available via the following link: http://www.darpa.mil/attachments/GRITProposersDaySlides.pdf

6Q: Is the GRIT BAA open to staff scientists at FFRDCs

6A: Eligibility requirements for FFRDCs are covered in Section III of the BAA.

5Q: Would a set of systems offering "tunable gamma rays from 10s of keV to 10+ MeV energies", say a decade of tunablity each, be considered responsive; rather than just one system to cover the entire energy range?

5A: No. Responses must address the energy ranges indicated within a single system. These ranges are indicated in Section I.E of the BAA. TA1 covers up to 3 MeV while TA2 spans from 3 to 15 MeV.

4Q: What is the scientific meaning of "elemental imaging"?

4A: Elemental imaging refers to the ability to distinguish and localize specific elements within an object of interest, either two or three dimensionally. An example is utilizing unique electron binding energies of specific elements to selective image different elements in an object. Section I.E, of the BAA provides a brief description of using the interaction of photons with k-shell electrons to image specific elements.

3Q: What is the specific, immediate problem DARPA is trying to solve under the GRIT program?

3A: As described in Section I.C of the BAA, GRIT aims to develop prototype systems with relevant form factors for elemental imaging, nuclear resonance fluorescence, penetration radiography, and photofission. As such, GRIT systems can be viewed as enabling tools for a variety of national security applications.

2Q: How should one interpret the specification “intensities as high as 10^12/second” for a pulse system; as average intensity, peak intensity, or some combination thereof?

2A: This intensity is the average photon output available for applications of interest. Related repetition rate, bandwidth, and energy range objectives are described within Section I.E of the BAA for each technical area.

1Q: Would you be interested in developing a switchable radioisotope generator from alpha reactions for GRIT?

1A: Specific technical approaches are not prescribed, rather system objectives and envisioned applications are described in Section I.E of the BAA. Sufficient tunability and control may be required for precision applications such as k-edge imaging and nuclear resonance fluorescence for Technical Area 1 systems.