Laboratory Directed Research and Development
Proposal Template and Instructions
Exploratory Research

This document provides the instructions and template for all Exploratory Research (ER) categories *except* Engineering (ENG). Each section of the template provides important instructions as to how that section should be written. Do not deviate from the format, font, font size, or page limits provided in the template. Many good ideas fail to win funding because they are not well presented to the reviewers, so take full advantage of the guidance provided in this template.

It is strongly suggested that you first read through this entire document and take note of the various pieces of information that will be required and the order in which that information should be written. Here are a few points for immediate consideration:

Know your target audience and realize that reviewers will fall into two classes: (1) those well versed in the general field in which they are reviewing proposals, but probably not expert in your specific sub-category, and (2) intelligent scientists and engineers from an-other field. The most successful proposals have been those that reach both audiences, communicating both the excitement of the project and its technical soundness.

Identify your project and yourself. The title of your proposal and the project number (which will be generated by Q) must be entered in the page header. Your name (last, first, middle) must be entered in the footer.

Adhere to page limits. The total page limit for the body of the proposal is seven (7) pages. An appendix consisting of three additional sections (Qualifications of PI and Team, Citations, and Investigator CVs) is not included in the page limit. If a coversheet is required to identify Controlled Unclassified Information (CUI), it is not included in the page limit. The template suggests page limits for each section, but as long as you do not exceed the overall page limits for the proposal body, section limits are left to your discretion.

Graphical explication of concepts is encouraged. Graphics that illustrate not only technical results and instruments, but also more abstract concepts, have great value in reaching your audience. Graphics must be sized large enough to be readable. Well-written proposals typically use at least 25% of the page area for graphics.

If you fail to follow the provided proposal template, your proposal may be rejected without technical review. Please contact the LDRD Program Office at 7-1235 if you have questions or require assistance.

Proposal Title

PI: Name (Last, First, Middle Initial); Group; Email

Include this coversheet only if your Proposal includes Controlled Unclassified Information (CUI)

Coversheet not included in Proposal page count

Insert appropriate CUI Cover Markings here

Include CUI Page Markings in footer

See https://policy.lanl.gov/pods/policies.nsf/LookupDocNum/P204-1/$file/P204-1.pdf for examples

Research Goals

Summarize the broad, long-term research goals (objectives) of the specific research proposed. Use this section to catch your reader's attention. Explain why the reviewer should be interested and excited about your research. Examples of research goals: test a hypothesis, create a novel design, solve a specific problem, address a critical barrier to progress, or develop new technology. Two to three relatively broad goals are reasonable for an ER proposal. The suggested section length is about ½ page.

Subsections may be added

Subsections are not required but may be added under primary heading text.

Background & Significance

Provide brief background for the proposal (including relevant published work), critically evaluate existing knowledge, and specifically identify the gaps that the project is intended to fill. Clearly state how this work will impact the field and advance our scientific knowledge. Describe the potential impact on the concepts, methods, technologies, or basic knowledge of this field. A critical component of this section is to differentiate the proposed work from ongoing work – at LANL or elsewhere. Set the stage for the proposed work; convince the reviewer of the technical importance of the problem being addressed and of the tremendous impact and significance of the expected outcome(s). The suggested section length is about 1 page.

Subsections may be added

Subsections are not required but you may wish to divide this section into sub-sections. One possible subsection may describe novelty of work in light of other on-going work.

R&D Approach

After convincing the reader of the importance and impact of your proposed work, this section explains *how* you will conduct your research. Explain the specific approach that will be used to meet the research goals. The suggested length for this entire section is 2-4 pages.

Preliminary studies

Use this subsection if preliminary studies have been performed. Outline the current state of this work at the Laboratory or collaborative institutions. Preliminary studies are any work pertinent to this proposal that will help establish the efficacy of the ideas and the experience and competence of the investigator to pursue the proposed project.

Methods, Technical Challenges & Alternatives

Describe the research design concepts, procedures, and analyses to be used to accomplish the research goals of the project. Include how the data will be collected, analyzed, and interpreted. Describe any new methodology and its advantage over existing methodologies. Describe any novel concepts, approaches, tools, or technologies for the proposed studies.

Successful PIs recognize the most significant and most likely technical challenges they will face and plan for those eventualities. An important component of a good proposal is to convey a clear understanding of the highest risk aspects of the proposed approach and describe alternate ap-

proaches. A proposal will be less competitive if it does not address the most important technical challenges.

The purpose of this section is to convince the reviewer that the challenges underlying each research goal are well understood and that there is a well-conceived plan for addressing those challenges. The PI should communicate that the most difficult technical challenges have been carefully analyzed and alternative approaches have been considered (e.g: If plan A fails, what is plan B?)

A final purpose for this section pertains to those proposals with *exceptionally high-risk* research challenges or unknowns and commensurate high-value benefits. In the past, reviewers have been reluctant to positively review high-risk/high-payoff proposals that may experience an insurmountable technical obstacle in the project's early stages. In order to improve the chance of success for such high-risk/high-payoff proposals, this section should be used to clearly define the highest-risk component(s) of the work, explain mitigating approaches, and describe go/no-go decision points in the project that will enable a reviewer to assess the prospects for a successful project outcome at the one- and two-year milestones.

Expected results

This section should describe the expected results of a successful project. A critical aspect of this section is to consider the challenges and alternatives discussed above and explain how the results may be used to assess whether the research effort has been successful.

Schedule and Milestones

Provide a tentative sequence or timetable for the project, including milestones that are tied to the research goals. A graphic such as that shown below is a possible (but not required) approach to presenting such a plan.
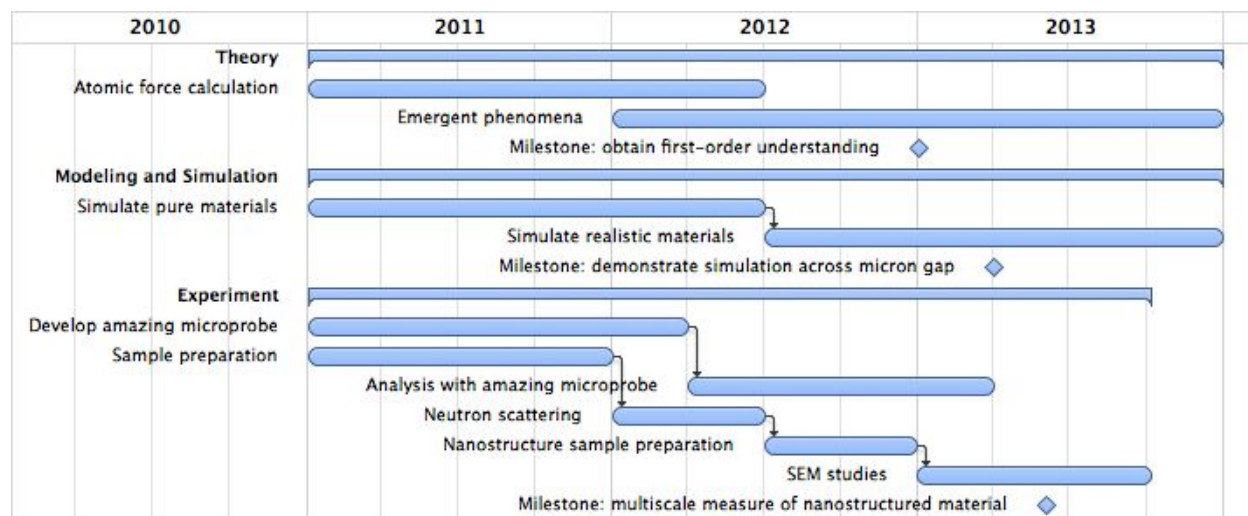

FIG 1: A project plan graphic like this one allows a quick understanding of the major tasks, schedule, and milestones. FIGURE and TABLE Captions should be 10-point or larger fonts.

Mission Relevance & Program Development Plan

The ER component of LDRD is designed to build or maintain capabilities that are crucial for addressing future Laboratory mission challenges. Describe how this project will build the capabilities needed for national security missions at the Laboratory into the future. While a clear link should be drawn between the capability and future mission, it is not necessary that the proposed work has a clear link to, or directly supports, missions. The proposal should also include a clear vision of how this work (and the capabilities developed) will contribute to future program development. For example, address how the results (basic knowledge, instrumentation, codes, materials, etc.) of the research proposed will form the foundation for or support new program development directions. *Identify at least one Laboratory program office or manager who will be cognizant of the research* and can serve as liaison to develop relationships with potential funding sources. The suggested section length is less than ½ page.

Subsections may be added

Subsections are not required but you may wish to divide this section into sub-sections. You may wish to choose to separate mission relevance from specific program development plans.

Budget Request Justification

Provide a *justification* that the budget requested is reasonable and sufficient for the proposed work. Annual budget requests are made in Q on the Project Information Page, not here. The total requested budgets must adhere to funding limits outlined in the original call for proposals. This section should include a brief description of anticipated hardware and consumables costs needed to meet proposed goals and milestones. Any request for supplemental M&S (in accordance with the ER call) must be justified here. No more than 100K per year additional M&S may be requested for up to the first two years. Describe how all significant M&S costs are crucial to the proposed project goals. You will be required to upload to Q a separate PEM Cost Estimate Detail provided by your budget analyst. The suggested page limit for this section is a relatively brief paragraph.

*** END OF PAGE-LIMITED SECTION ***

Qualifications of PI and Team

Explain why the proposed PI and team are qualified to conduct the work. This section should include a brief description of "who is doing what." Also describe why this work should be conducted at Los Alamos, what Laboratory resources enable this work, and what unique capabilities and resources at Los Alamos are important for this work. The suggested length for this section is one page.

Citations

Pages used to list references will not be included in the proposal page count. List all references you may have used throughout the body of your proposal and number them accurately so that they match the in-text reference numbering. References are key to a successful proposal, so make sure they are accurate. Reviewers are not impressed with proposals in which the in-text reference numbers do not correspond with the reference list that you will provide in this section or are otherwise mixed up. You may use End Note or a similar tool.

Investigator CVs

Each CV should not exceed two pages. PI, Co-PI, and Co-Investigator CVs are used (together with the section titled "Qualifications of the Research Team") to judge the ability of the research team to successfully carry out the proposed work. CV's *do not* count in the proposal length.