Contents

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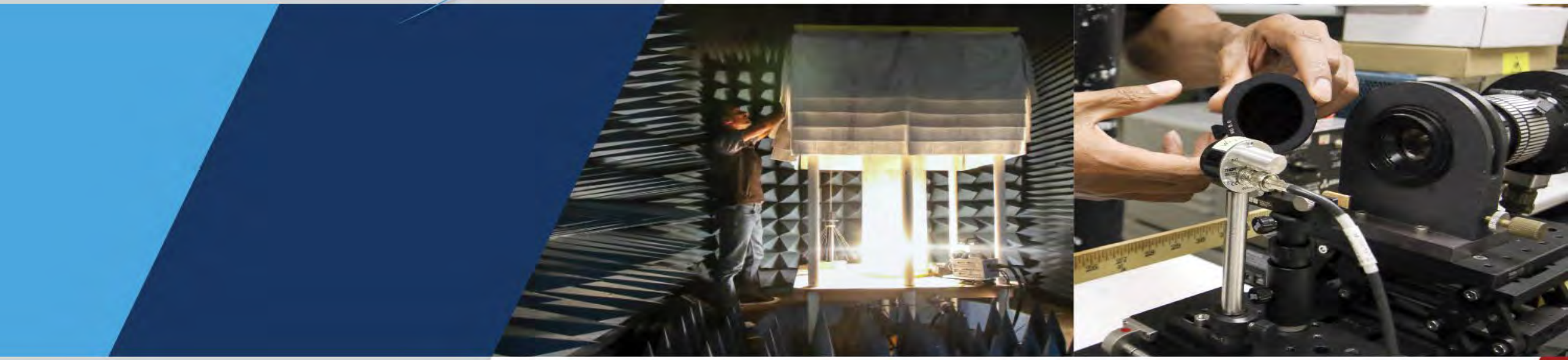
The SDRD Proposal Process



A guide for principal investigators and technical representatives

Export Controlled Information
Export Classification: EAR99
Reviewed for Classification
Paul P. Guss, MSTS, EV10
November 24, 2022

The Nevada National Security Site is managed and operated by MSTS under contract number DE-NA0003624.

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Course Objective

To help proposal writers submit successful pre-proposals, invited proposals, and feasibility studies that align with NNSA mission needs, NNSS strategic objectives, and peer-reviewed technical evaluation

Proposal Phases: Big Picture

1. Pre-proposals

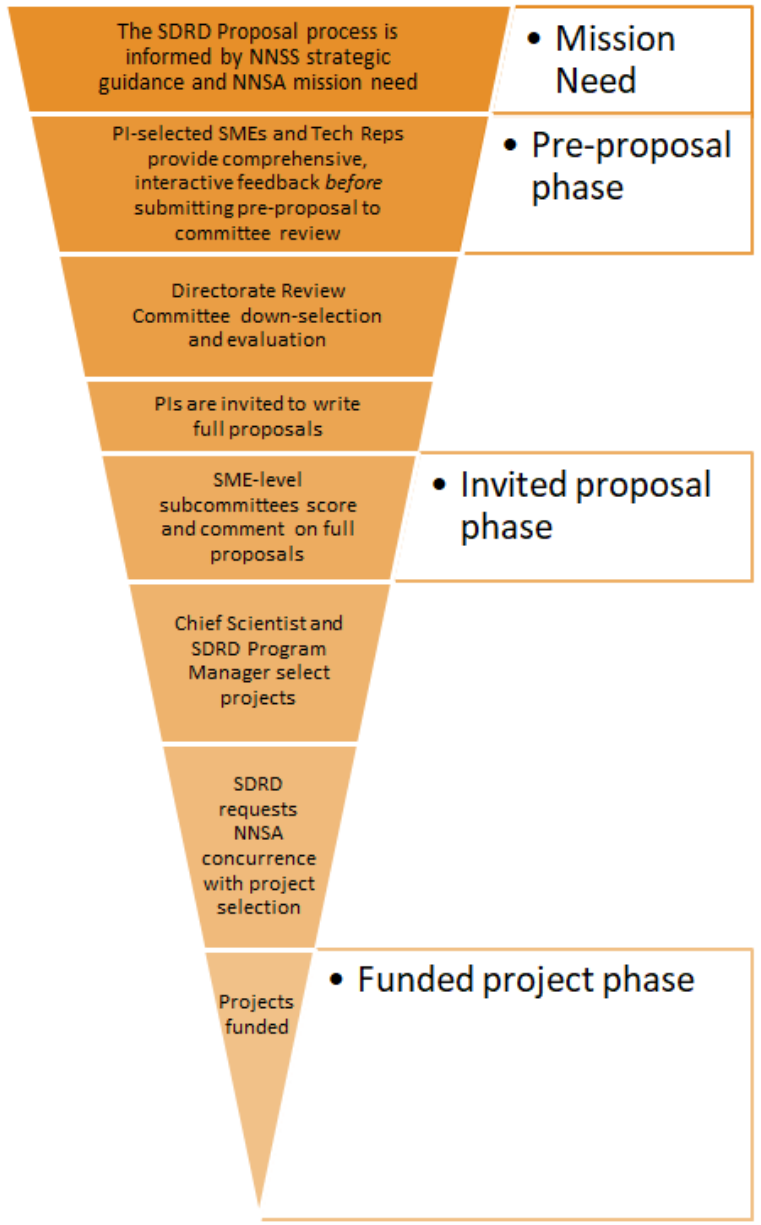
   February 20–April 9

2. Invited proposals

   May 1–June 4

3. Funded projects

   October 1–September 30



SDRD Program

OVERVIEW OF SDRD PROGRAM PROPOSAL PHILOSOPHY

SDRD Proposal Philosophy

A note from the Science and Technology Directorate Chief Scientist, José Sinibaldi:

- Proposals should be designed to meet NNSA mission needs and NNSS strategic initiatives—foremost is National Security

NNSS Mission

- Supporting the stewardship of the nation’s nuclear deterrent
- Providing nuclear and radiological emergency response capabilities and training
- Contributing to key nonproliferation and arms control initiatives
- Executing national-level experiments in support of the National Laboratories
- Working with national security customers and other federal agencies on important national security activities
- Providing long-term environmental stewardship of the NNSS’s Cold War legacy

NNSS Mission Link

Mission Agility

Enable agile responses to national security challenges.

Technical Vitality

Advance the frontiers of science, technology, and engineering.

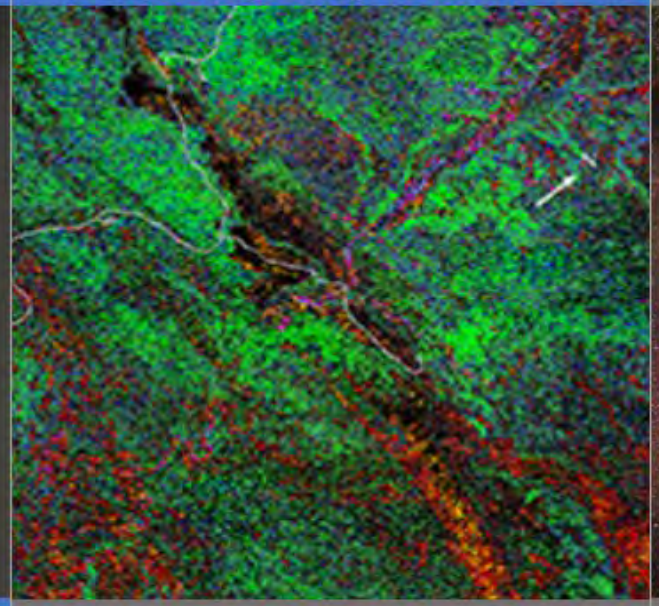
Workforce Development

Attract, develop, and retain tomorrow's technical workforce.

NNSS Science and Technology Thrust Areas

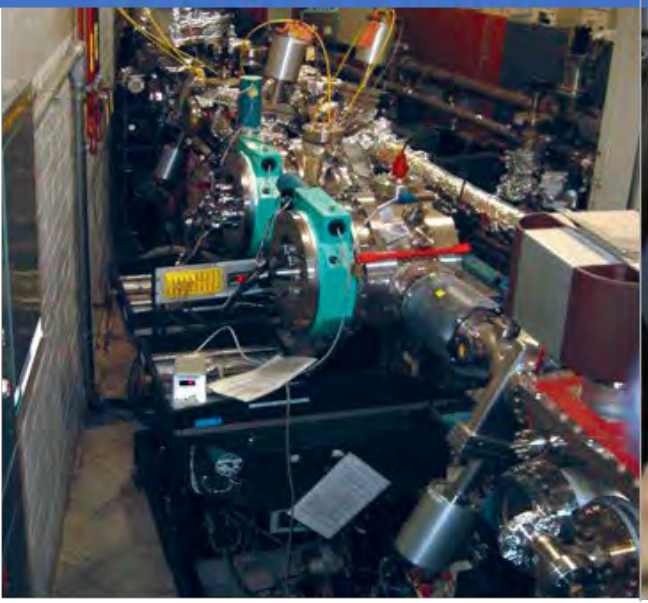
Radiographic Systems Imaging and Analysis

User-Centered Remote Testing & Operations



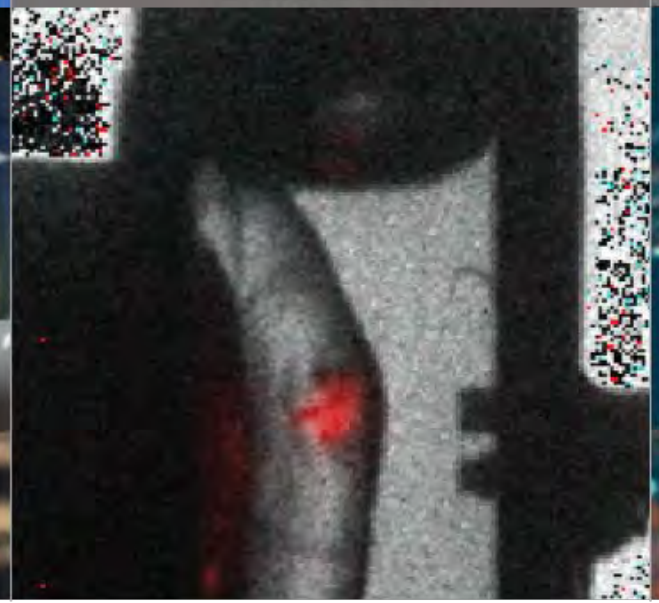
Neutron Technologies and Measurements

Accelerator Beam Science and Target Interactions



Enabling Technologies for Autonomous Systems & Sensing

Dynamic Experiment Diagnostics



Communications and Computing

Ensuring Mission Alignment

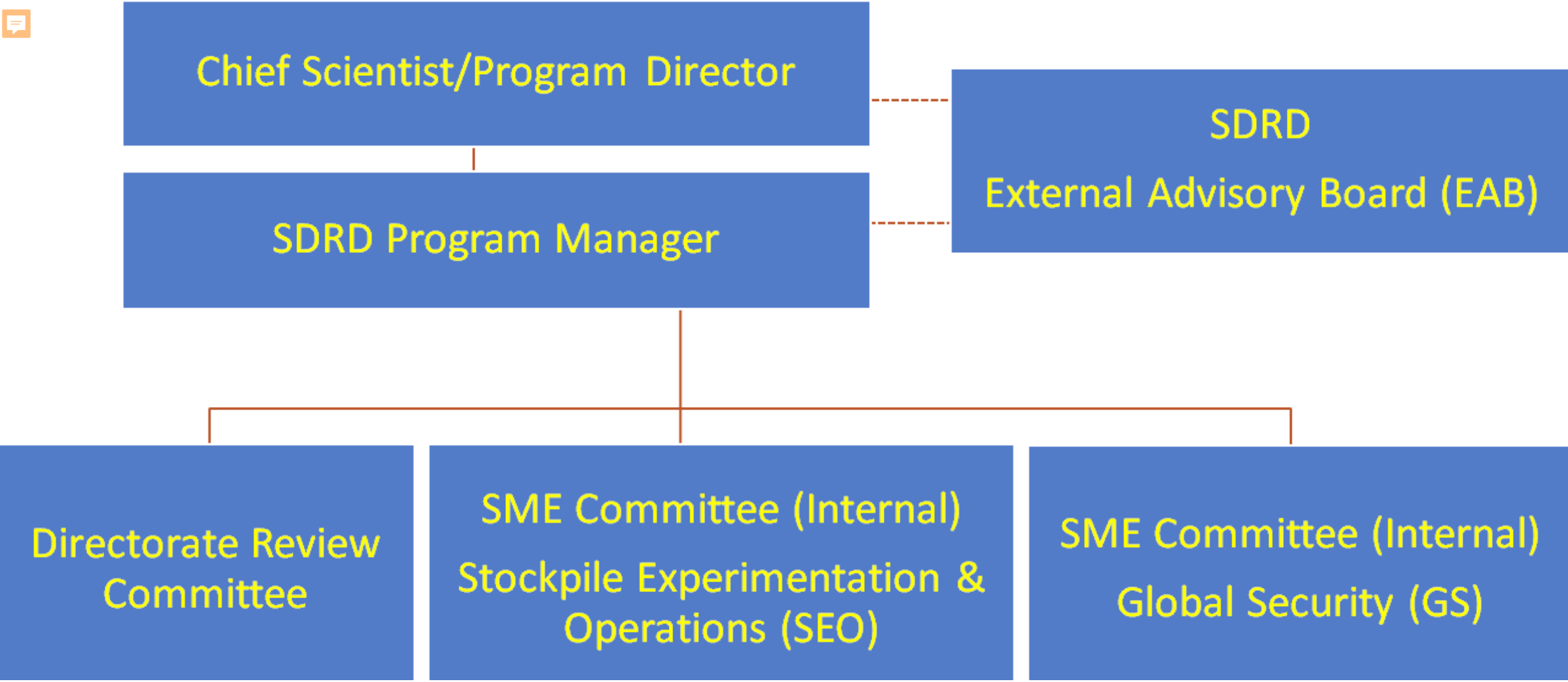
Step 1

Stockpile Experimentation & Operations (SEO) and Global Security (GS) Directors, along with Strategic Partnership Projects (SPP), will review the submitted pre-proposals to determine how well ideas align with mission goals and fit with strategic initiatives

Step 2

Subject Matter Experts (SMEs) will review full proposals solely for scientific and technical rigor, because the Directorate review already determined their mission relevance

The Directorate Review Committee down-selects pre-proposals because it has a broad view of all programmatic work and future directions and can quickly determine a proposal's mission relevance


Chief Scientist/Program Director
SDRD Program Manager
SDRD
External Advisory Board (EAB)
Directorate Review Committee
SME Committee (Internal)
Stockpile Experimentation & Operations (SEO)
SME Committee (Internal)
Global Security (GS)

Role Highlights

These positions help with the overall pre-proposal and invited proposal process

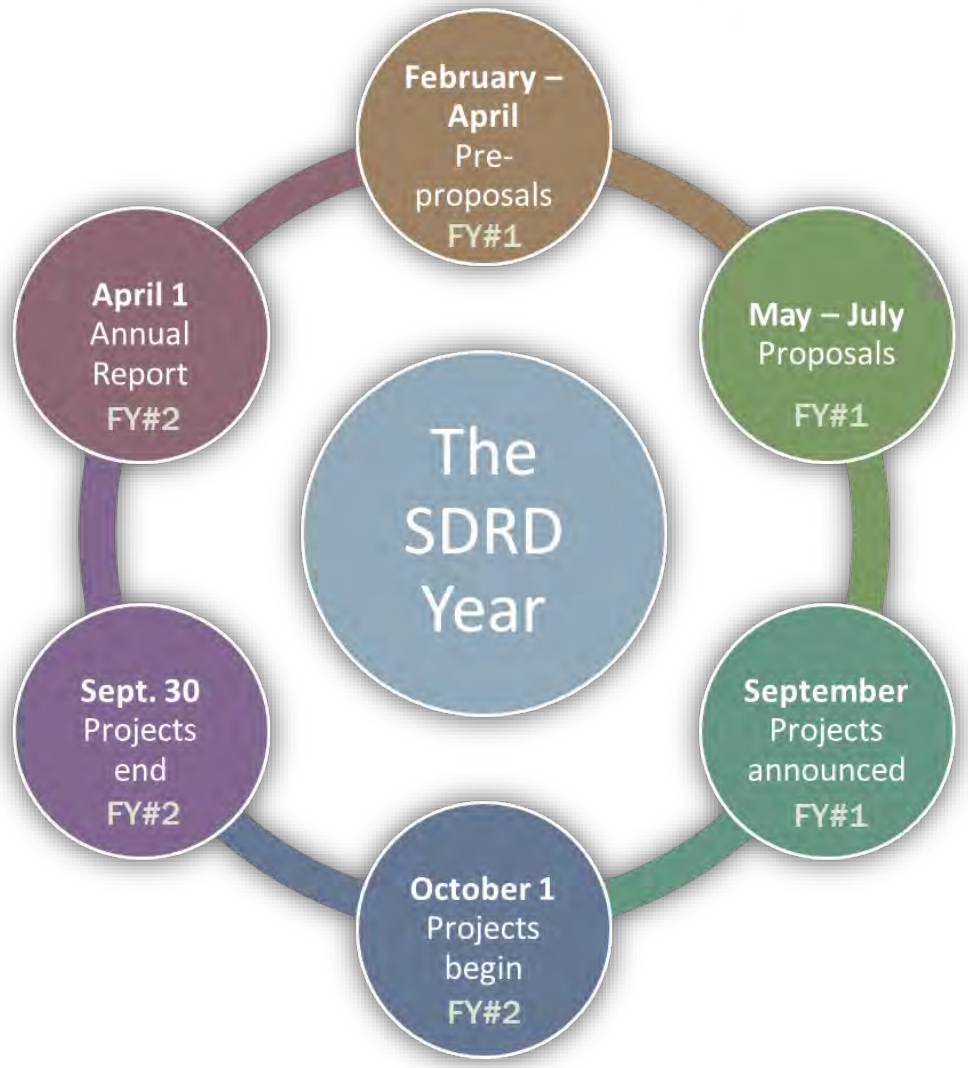
- **Principal Investigators**
  - Brainstorm, draft, and submit pre-proposals and invited proposals; *initiate* reviewer feedback on the SDRD website portal
- **SDRD Technology Representatives**
  - Provide high-quality feedback to PIs in timely manner and communicate with the SDRD Program Manager
- **SDRD Program Manager**
  - Communicates with Technology Representatives and the Director; provides guidance to Technology Representatives and helps them align proposals to programmatic goals and SDRD focus areas; directly supports SDRD Director; is responsible for execution of SDRD program
- **SDRD Director/Chief Scientist**
  - Based on established Program priorities and companywide strategic vision, reviews and makes final selection of invited proposals for MSTS president's approval; with help from Tech Reps and PM, defines strategic vision
- **Site Representatives**
  - Mentor potential PIs developing concepts and proposals for future projects and feasibility studies; mentor PIs on project execution; provide site-based support throughout the proposal process and participate in pre-proposal and full proposal feedback, review, and scoring
- **Support Staff**
  - Help with editing, planning, and website navigation during proposal process

Proposal Calendars

PRE-PROPOSAL TO FUNDED PROJECT TIMELINE

Fiscal Year

- The proposal-to-funded project process overlaps two fiscal years



SDRD Proposal Calendar Link

Proposal Timeline

General Dates

- Feb–April: call for pre-proposals; pre-proposal drafting, intensive SME feedback, and submission to Directorate Review Committee
- April: pre-proposal evaluation and scoring
- May: invited proposals drafted and submitted
- June–July: final proposal evaluation and project nomination
- Aug: Program Plan submitted for NNSA concurrence
- Sept: selected projects announced
- Oct 1: projects begin and new fiscal year starts

Funded Projects Dates and Deadlines

What	When
Project and PEP kickoff meeting	Late September/early October
Projects begin	October 1
Monthly reports	First week after close of previous month
Quarterly reviews	Shortly after close of quarter
Final presentation submission	Early September
Final review meeting in Las Vegas	Last week of September
Projects end	September 30
Final report submission due	September 30
Annual Report published	April 1

The SDRD Website

NNSS INTRANET ONLY

HOT TIP!

https://nlv-ddsp1-ws.nts.ops/SDRD/index.php/proposals

Site-Directed Research & Development

home | proposals | projects | awards | r&d resources | about | contacts | search | external funding opportunities

You are here: Home ▸ Proposals ▸ Guidance for proposal writers

FY 2024 Full Proposal Guidance

SDRD Proposal Guidance

Please note that the proposal web-based applications work in Microsoft Edge and Google Chrome; other web browsers are not supported.

All proposals are entered and submitted electronically through the SDRD website proposal portal. The site also contains archived proposals from previous years, additional proposal guidance for authors, and resources for developing your proposal. This article describes the type of content reviewers are expecting in each section of the proposal. While you are in the proposal form online, tool tips will also be available.

› Read more: FY 2024 Full Proposal Guidance

SDRD Intranet Website Resources

- Writing Resources
- Reference Formatting Tips
- Proposal Planning Guides
- Articles and publications
- Calendars
- Blogs

- Pre-proposal entry
- Reviewer feedback prompt
- Invited proposal entry
- Monthly report entry
- Final Review submission
- Project tracking
- News and announcements

See the Resources slide

SDRD Intranet Website Link

Tips for All Proposers

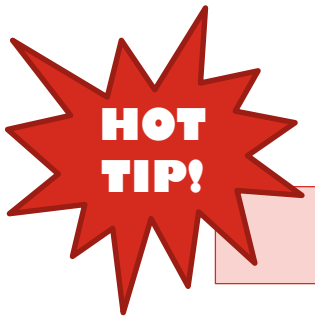
WEBSITE, RESOURCES, ARTICLES

Must-Do Tips for Proposal Success

- ✓ **Focus on how the proposal meets NNSS mission needs**
- ✓ Know the current efforts related to your proposal, internal and external
- ✓ Start early
- ✓ Brainstorm and confer with knowledgeable people, SMEs, and team members
- ✓ Know how proposals will be evaluated
- ✓ Keep pre-proposal impact statements at a high level
- ✓ Initiate the reviewer feedback process through the website portal
- ✓ Ask for reviewer response early in the process
- ✓ Incorporate previously received and new feedback
- ✓ Communicate with technology representatives
- ✓ Conform to word count limits and submit on time

More Tips for Success

- Review other proposals, both to provide feedback and to consider teaming to create stronger projects
- Use S&T journal access for research
- *Early-career or inexperienced authors should ask for mentoring/writing help from successful authors, who often are advanced degree scientists trained to write technical proposals*
- Read all guidance on the SDRD website
- Read InSite articles about SDRD
- Use explanatory titles sufficiently long enough to convey the full idea (titles stay the same through the life of the project)
- Strengthen Continuation proposals to demonstrate forward movement



Don't forget to ask your SDRD Technology Representative for guidance!

Starting the Writing Process

- Start the process with a non-critical group brainstorm
- Find areas of common interest
- Create ballpark estimates and perform basic research before writing
- Propose ideas that address a topic identified in the Needs Assessment
- Refer to the Broad Site Announcement
- Identify authors who write well (or who are willing to learn) to take the lead

During the Writing Process

- Write and circulate pre-proposals and invited proposals to 4 or 5 colleagues for comment and review before submission to portal
- Communicate with and listen to tech reps to make sure pre-proposals and proposals line up with criteria of importance to the reviewing committee
- Later, for invited proposals, meet as a team to find technical holes

Pre-Proposals

PHASE I OF THE PROPOSAL PROCESS: FEBRUARY THROUGH APRIL

Pre-Proposal Guidelines

- Align pre-proposal to strategic initiatives and mission needs
- Keep the impact statement high level
- Follow Heilmeier approach to research and development
- Write brief statements to describe the:
  - ✓ problem
  - ✓ technical approach
  - ✓ cost estimate
  - ✓ expected impact of the research
- Identify feedback providers
- Use the Word template on the SDRD website to draft
- Limit to under 2 pages
- Submit *only* on the portal
- **April 9**: Pre-proposal due—pay attention to the posted date!

Pre-Proposal Guidance Link

Pre-Proposal Evaluation Link

Heilmeier questions for SDRD Link

Mission Alignment

- The method by which evaluators evaluate pre-proposals has been refined recently.
- After the call for pre-proposals ends, a Directorate Committee will review the submitted ideas specifically to determine how well the ideas align with mission goals.
- Previously, this step was part of a single technical review that occurred during the invited proposal phase.

- By splitting out this review, the full proposals will be reviewed later by SMEs solely for scientific and technical rigor, because they have already been vetted for mission alignment.

S&T Thrust Areas (STTAs)

- Accelerator Beam Science and Target Interactions
- Enabling Technologies for Autonomous Systems and Sensing
- Radiographic Systems Imaging and Analysis
- User-Centered Remote Testing and Operations
- Dynamic Experiment Diagnostics
- Neutron Technologies and Measurements
- Communications and Computing

Heilmeier Approach to Research & Development

1. What are you trying to do?
   - what is the concept? what are you trying to accomplish?
2. How does this get done now?
   - what are the shortfalls of current methods/approaches?
3. What is NEW or INNOVATIVE about your concept or idea?
   - what are the technical limitations that may currently hinder you?
4. If you succeed, what impact or difference will it make?
5. How long will it take to realize your concept?
   - what benchmarks will you establish to measure progress?
6. How many people will it require?
   - do you have all the skills/resources necessary?
7. Are you qualified to accomplish all the tasks?
   - who do you need to collaborate with to be successful?
8. How much will it cost?
9. Will this lead others to follow suit and develop ideas further?

Pre-Proposal Evaluation and Grouping

- Pre-proposals are evaluated with a “cold, warm, hot” scoring matrix that focuses on mission alignment and strategic initiatives
- Proposals will be grouped by alignment with strategic initiatives
- Non-aligned proposals will move to exploratory research
- Technical review happens separately after mission alignment is assured

Mission Alignment Link

Strategic Initiatives Link

The review team is looking for high-level impact statements in the pre-proposals. Technical details should be reserved for the full proposal stage.

Proposers Initiate Reviewer Feedback

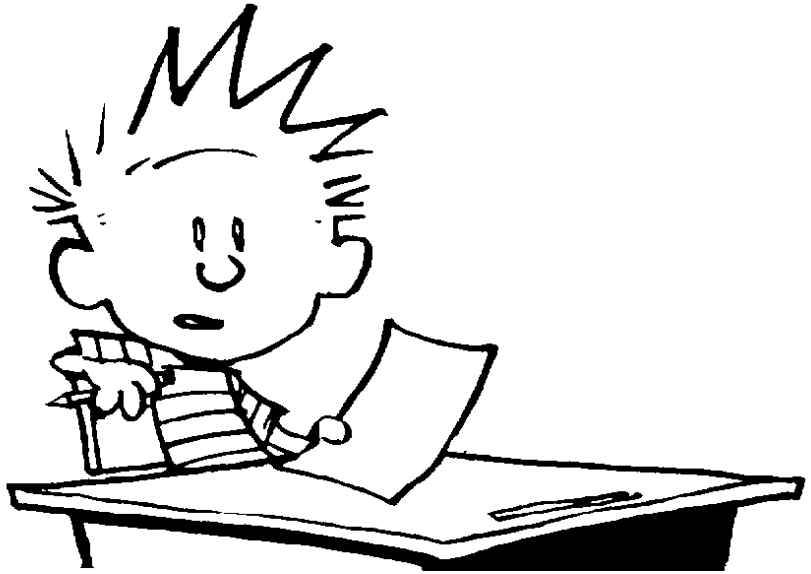
- PIs *must* initiate reviewer feedback!
- Technology representatives are default feedback providers
- PIs can add up to three more feedback providers
- Click SEND EMAIL button to notify all feedback providers at once
- Reviewers can be refined later

All About Feedback Link

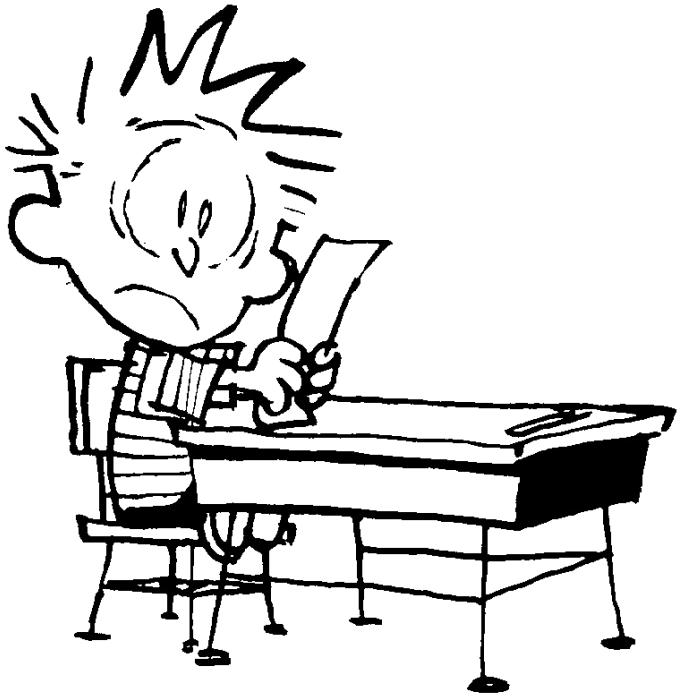
Invited Proposals

PHASE II OF THE PROPOSAL PROCESS: MAY 1 TO JUNE 4

You have been invited to submit a full proposal, due in 4 weeks…



Weeks 1, 2, 3, and part of 4…



Near the end of Week 4…

The Last Minute

Writing the Invited Proposal

- Receive notice in May if invited
- Fill out the online proposal form completely
- Use Word proposal worksheet to write drafts
- Limit to no more than 5 pages
- Stay within word count limits
- Incorporate feedback received
- Initiate new reviewer feedback
- Assign collaborators to help with developing, editing, and refining the proposal

Does the Proposal Do These Things?

- ✓ State the problem or describe the gap?
- ✓ Demonstrate a clear understanding of the current state-of-the-art research?
- ✓ Provide unambiguous benefit to mission and impact statements?
- ✓ Provide a succinct, compelling summary of the project and its importance?
- ✓ Give sufficient detail in the technical approach?
- ✓ Support technical statements with credible references or prior work?
- ✓ Address previously identified weaknesses (from pre-proposal feedback or earlier proposals)?
- ✓ Realistically estimate time, deliverables, and cost to achieve scope?
- ✓ Identify a customer/user?
- ✓ Adequately consider follow-on funding, intellectual property, and publications?
- ✓ Adequately consider team, staff, and facilities?
- ✓ Describe previous years' progress and future years' work (for continued projects and multi-year life cycles)?

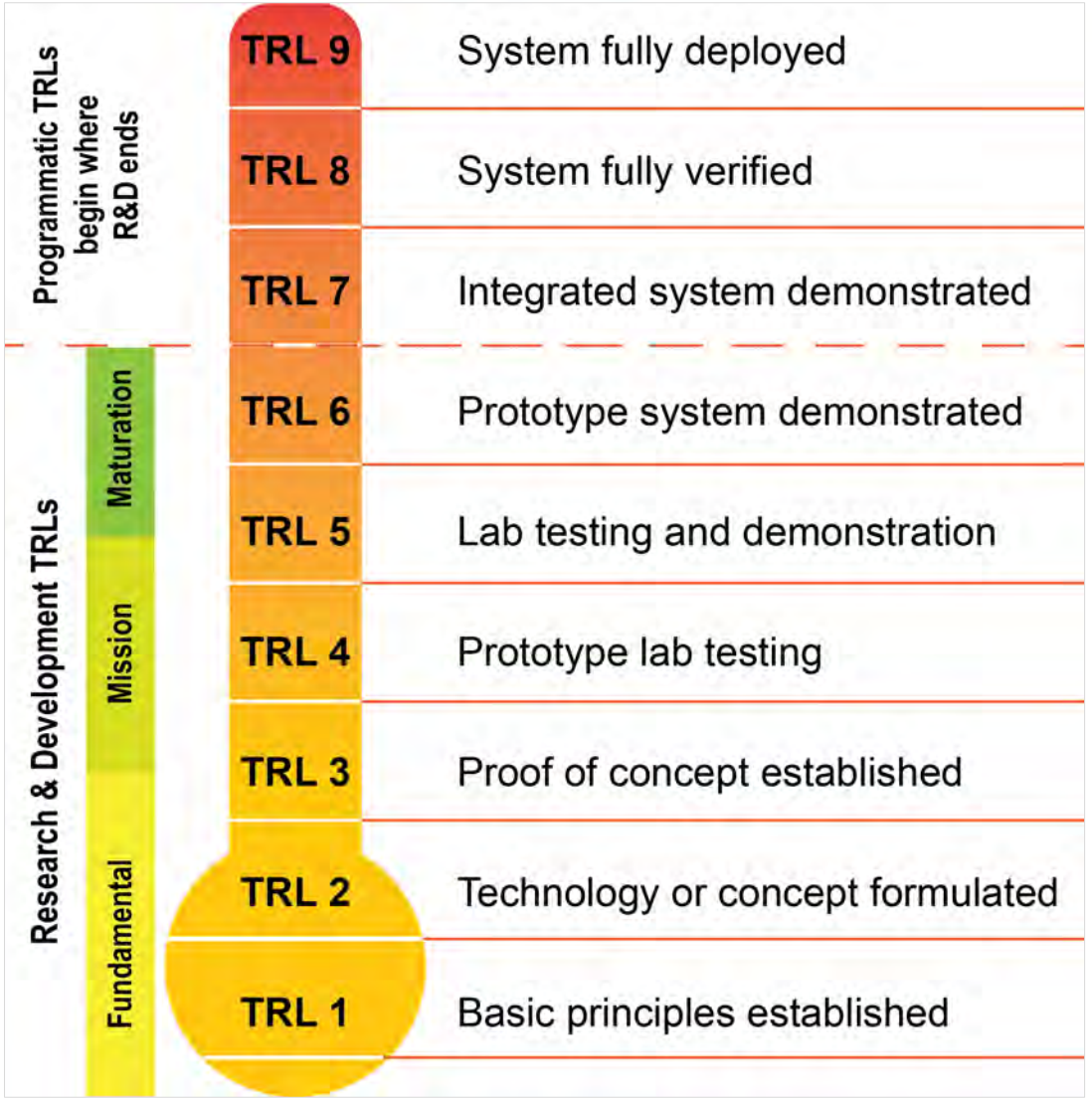
Pay attention to Technology Readiness Level (TRL) portfolio points for your proposal's focus area

Evaluation Scoring Matrix and TRLs

TECHNOLOGY READINESS LEVELS (TRLS)

NNSS Technology Readiness Levels

- ✓ High Risk Portfolio (HRP) TRL = 0–2
- ✓ Mission Research Portfolio (MRP) New Diagnostics and Techniques TRL = 3–4
- ✓ Mission Development and Demonstration Portfolio (MDDP) Technological System Integration TRL = 5+



Invited Proposal Point Values

- Technical Merit (40 points)
- Program Benefit (20 points)
- Probability of Success (10 points)
- Critical Skills (15 points)
- Leverage (15 points)

Technical Merit – 40 points

Focus/Questions	Outstanding	Very Good	Satisfactory	Marginal	Unsatisfactory
• Is there a solid understanding of state of the art? • Are method and technical approach proposed appropriate? • Can difficult problems proposed be solved using innovation and discovery? • Does this represent a new approach?	HRP (32-40 points): Extreme-quality innovation MRP (30-40 points): High-quality innovation MDDP (30-40 points): Innovative solution	HRP (26-31 points): High-quality innovation MRP (23-29 points): Good-quality innovation MDDP (23-29 points): Somewhat innovative	HRP (16-25 points): Average-quality innovation MRP (12-22 points): Average-quality innovation MDDP (12-22 points): Somewhat obvious solution	HRP (9-15 points): Low innovation MRP (6-11 points): Low innovation MDDP (6-11 points): Obvious solution	HRP (0-8 points): Not innovative MRP (0-5 points): Not innovative MDDP (0-5 points): COTS solutions exist
	A fundamental intellectual advance and/or fundamentally new approach that transforms our knowledge of nature and enables radical new methods or techniques solving the most difficult problems.	Highly innovative, conceptually intriguing, rarely conceived idea; would alter current methods and techniques in a major way.	Identifiable innovation, but transformational aspects do not stand out. Mostly incremental in expected outcome.	Innovation is minimal. Possible incremental advance.	No innovation.

HRP TRL = 0–2
MRP TRL = 3–4
MDDP TRL = 5+

Program Benefit – 20 points

Focus/Questions	Outstanding	Very Good	Satisfactory	Marginal	Unsatisfactory
• Has this approach or something similar been tried before? • Will a new discovery or capability result? • Is a verified user requirement addressed from the Needs Assessment? • Will new IP result? • Does it create a new mission? • Is it applicable to multiple programs or customers? • Will it result in an operational advantage?	HRP (16-20 points): Substantial advance MRP (18-20 points): Substantial advantage MDDP (18-20 points): Substantial advantage	HRP (11-15 points): Notable advance MRP (13-17 points): Notable advance MDDP (13-17 points): New capability	HRP (10-12 points): Moderate, incremental advance MRP (9-12 points): Moderate, incremental advance MDDP (9-12 points): Improved capability	HRP (6-9 points): Minimal advance MRP (5-8 points): Minimal advance HDDP (5-8 points): Incremental advance	HRP (0-5 points): No advance MRP (0-4 points): No advance MDDP (0-4 points): No advance
	Potential for revolutionary impact on science or technology that transcends and has historical significance.	A major advance likely to scientific or technical areas with lasting impact on knowledge, methods, and techniques.	Identifiable impact to a field that would have a significant impact to NNSS capabilities.	Relatively small advancement that may incrementally build NNSS capability.	Proposal would barely benefit any relevant areas.

HRP TRL = 0–2
MRP TRL = 3–4
MDDP TRL = 5+

Probability of Success – 10 points

Focus/Questions	Outstanding	Very Good	Satisfactory	Marginal	Unsatisfactory
• Have reasonable risks been anticipated and planned for? • How credible are the project plan, schedule, and budget? • How able and reliable are the PI and the research team; are team members onboard?	HRP (9-10 points): Clearly achievable MRP (9-10 points): Clearly achievable MDDP (9-10 points): Clearly achievable	HRP (7-8 points): Probably achievable MRP (7-8 points): Probably achievable MDDP (7-8 points): Probably achievable	HRP (5-6 points): Possibly achievable MRP (5-6 points): Possibly achievable MDDP (5-6 points): Possibly achievable	HRP (3-4 points): Not likely achievable MRP (3-4 points): Not likely achievable MDDP (3-4 points): Not likely achievable	HRP (0-2 points): Not achievable MRP (0-2 points): Not achievable MDDP (0-2 points): Not achievable
	Clearly defined effort and well-developed plan. All necessary elements appear to be in place.	A path to the result is proposed, but some elements are unclear or questionable.	With some additional planning or confirmed resources the proposal may succeed.	Proposal may not be successful due to lack of expertise or capabilities; some key components are lacking or not considered.	Proposal could not be successful.

HRP TRL = 0–2
MRP TRL = 3–4
MDDP TRL = 5+

Critical Skills – 15 points

Focus/Questions	Outstanding	Satisfactory	Unsatisfactory
• How does it build needed skills—for whom? • Does it provide new training in (which) critical area(s)? • Does it sustain critical skills for national security programs?	HRP (8-15 points): Outstanding MRP (8-15 points): Outstanding MDDP (8-15 points): Outstanding	HRP (1-7 points): Moderate MRP (1-7 points): Moderate MDDP (1-7 points): Moderate	HRP (0 points): Not relevant MRP (0 points): Not relevant MDDP (0 points): Not relevant
	Significant enhancement of mission-relevant skills; strong mentoring opportunity.	Enhances existing skills; at more mature level may develop new skills.	No new addition to critical skills.

HRP TRL = 0–2
MRP TRL = 3–4
MDDP TRL = 5+

Leverage – 15 points

Focus/Questions	Outstanding	Very Good	Satisfactory	Unsatisfactory
• There are four categories of collaboration: NNSS orgs outside that of the PI; DOE labs or other national R&D institutes; universities; and commercial companies • Does proposal include collaborations with partners outside the PI's group? • Does the proposed collaboration establish or maintain the talent pool for critical capabilities and national security missions now and in the future?	HRP (8-15 points): Three or more categories MRP (8-15 points): Three or more categories MDDP (8-15 points): Three or more categories	HRP (4-7 points): Two categories MRP (4-7 points): Two categories MDDP (4-7 points): Two categories	HRP (1-3 points): Single collaborator MRP (1-3 points): Single collaborator MDDP (1-3 points): Single collaborator	HRP (0 points): No collaborations MRP (0 points): No collaborations MDDP (0 points): No collaborations
	Three or more categories of collaboration.	Two categories of collaboration.	One collaborator.	No collaborators.

HRP TRL = 0–2
MRP TRL = 3–4
MDDP TRL = 5+

Continuing Projects

PROJECTS WITH A DURATION OF 2–3 YEARS

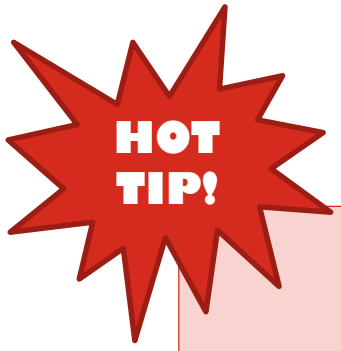
Continuing Projects

- A continuing project is a multi-year SDRD project that plans work in the fiscal year that follows.
- During each year it is funded, each continuing project will undergo a project review at the start of Q3 (early July) to determine if funding will continue in the following fiscal year.
- Continuing projects will not need to submit a new proposal each year. The Continuing Project Review will replace this requirement.

Continuing Project Reviews

- A Project Review Team will be nominated to conduct the Project Review of each continuing project.
  - The team is lead by the STTA Lead or SDRD Technology Representative.
  - Team members include all STTA Leads, the SDRD Program Manager, and the Chief Scientist of MSTS.
- The Continuing Project Review will address two basic questions:
  - What has been accomplished?
  - What is the plan to complete all the objectives of the research investigation?
- The Project Review Team Lead will produce a report to the project leadership with:
  - A recommendation of whether or not the project should continue into the following year.
  - If it will continue, recommendations of what avenues will best strengthen the project approach, new areas to focus on for maximum impact, and changes in scope or objectives that will optimize future investment.

Continuing Project Reviews



Show that you know the literature! A demonstrated understanding of current state-of-the-art research will be reviewed carefully during the Continuing Project Review.

Feasibility Studies

WHAT THEY ARE AND HOW THEY FIT WITH PROPOSALS

Feasibility Studies

- This is a special category of small SDRD projects (maximum funding of $175K per project and maximum 12-month duration) for the limited purpose of determining better definition or feasibility of a potential project without counting against the 36-month time limitation for SDRD projects
- A flexible way to execute short-term and low-cost projects to evaluate the potential success of novel technical approaches to mission-relevant S&T challenges and emerging needs
- Typically lasts three months with funding from $60K to $90K
- Quickly evaluates high-risk concepts that could significantly impact future missions and/or capability enhancement/development
- Non-selected submissions are captured for later incorporation into the regular SDRD project cycle

SDRD Feasibility Studies Link

Common Questions & Troubleshooting

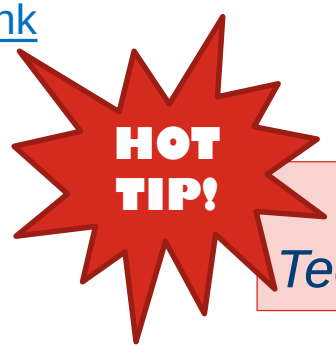
COMMON QUESTIONS FOR PROPOSALS AND PROJECTS

Common Questions

- I listed [name] as a team member but they can’t edit my proposal.
- I deleted my proposal or it disappeared.
- I can’t move my proposal to Final.
- My proposal is checked out by someone else, and I need to work on it.
- It’s past the proposal deadline, but I want to replace the figure in my proposal. Can I do that?
- It’s two days past the deadline but I haven’t had time to enter a proposal, but I have it all written out and I want to get it in.
- Can I change the PI?
- My proposal is classified. How do I submit it?

Resources

- All About Feedback Link
- Broad Site Announcement
- General SDRD Resources
- Guidance for reviewers to follow
- Heilmeier questions for SDRD Link
- How Is My Proposal Evaluated?
- How to Prepare a Proposal
- Mission Alignment Link
- Needs Assessment and Program Plan
- NNSS Mission Link
- Pre-Proposal Evaluation Link
- Pre-Proposal Guidance Link
- Proposal Reviewer Guidance
- Proposal Scoring Matrix
- SDRD Feasibility Studies Link
- SDRD Intranet Website Link
- SDRD Overview Page, Public Link
- Strategic Initiatives Link
- TRL Thermometer
- Understanding the Full Proposal Matrix for the SDRD Program



A great resource is your SDRD Technology Representative!