

Submission Instructions: Save Cover Page, Technical Proposal, PI Curriculum Vitae, and Cost Estimate within one (1) MS Word file, convert to PDF using Adobe, and submit to the ERDC web portal for proposal submissions using following standard file naming convention, LastName_FirstName_2023_BRproposal_abbreviated title.pdf (not to exceed 50 characters) Also, submit Marketing, Question and Narrative Charts as a separate .ppt or .pptx file.

BASIC RESEARCH PROPOSAL COVER PAGE

1. SUBMIT TO: Director U.S. Army Engineer Research and Development Center	2. For consideration by <input type="checkbox"/> Geospatial Interactions and Processes from Heterogeneous and/or Complex Geospatial Data <input type="checkbox"/> Geospatial Analysis and Intelligence <input type="checkbox"/> Environmental Interfaces of Engineering Systems <input type="checkbox"/> Multi-Scale Characterization and Modeling of Materials <input type="checkbox"/> Engineered Materials by Design <input type="checkbox"/> Future Transformative Technologies for Military Engineering <input type="checkbox"/> Innovative Material Science for Infrastructure <input type="checkbox"/> Computational Science and Complex Military Systems <input type="checkbox"/> Resilient Installation Science <input type="checkbox"/> Informed Threat Environment <input type="checkbox"/> Biotechnology for Warfighting Functions <input type="checkbox"/> Unique Biological, Chemical, and Physical Processes	3. PI ERDC experience <input type="checkbox"/> < 5 years <input type="checkbox"/> 5 - 15 years <input type="checkbox"/> > 15 years								
4. Title of Proposed Project <div style="height: 40px; border: 1px solid black;"></div>										
5. Table of Contents: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">Table of Contents</td> <td></td> </tr> <tr> <td>TECHNICAL PROPOSAL</td> <td style="text-align: right;">3</td> </tr> <tr> <td>CURRICULUM VITAE</td> <td style="text-align: right;">7</td> </tr> <tr> <td>COST ESTIMATE</td> <td style="text-align: right;">8</td> </tr> </table>			Table of Contents		TECHNICAL PROPOSAL	3	CURRICULUM VITAE	7	COST ESTIMATE	8
Table of Contents										
TECHNICAL PROPOSAL	3									
CURRICULUM VITAE	7									
COST ESTIMATE	8									
6. Total Proposed Amount: \$K	7. Proposed Duration (number of months)	8. Proposed Start Date								
9. Principal Investigator (PI) Laboratory, Telephone numbers and email address: <div style="height: 60px; border: 1px solid black;"></div>										
TYPED NAMES	OFFICE TELEPHONE NUMBER	CELL/BLACKBERRY NUMBER	E-MAIL ADDRESS							
co-PI										
co-PI										
co-PI										

Laboratory Director endorsement is required to ensure proposals have been evaluated by the laboratory and meet the criteria for basic research.

Format Instructions: Proposals will be MS Word compatible, single-spaced using Arial 12-point font with one-inch margins.

Director of Submitting Laboratory – In signing this block, I am certifying I have reviewed this proposal and find it is representative of Basic (6.1) level research.

Technical Proposal is not to exceed ten (10) pages in length to include graphics and equations. Bibliography, Curriculum Vitae, Cost Estimate, and Marketing, Question and Narrative Charts are not included in the ten page limit.

TECHNICAL PROPOSAL

- a. **Title:**
- b. **Research Objective:** State the basic research problem being pursued or the question to be answered by the research objective. **Provide a testable hypothesis in bold text.**
- c. **Potential Impact and Significance:** Describe the significance or potential impact to the scientific field or discipline and the relevance to the ERDC and the Army if the research goals are achieved. Explain why the Army should pursue and fund this research.
- d. **Innovation:** Provide details on why this research should be considered innovative. Will the project utilize novel ideas and methods to produce significant new insights and knowledge?
- e. **Strategic Research Area Relevance:** The Strategic Research Areas (SRAs) identify the priority research topics for each Research Development Area. Identify the SRA to which your proposal most directly applies and provide details indicating the relevance of the proposed research to the chosen SRA.
- f. **Background:** Provide a clear statement of the present state of knowledge in the field including internal ERDC research and research outside of ERDC. Describe how the proposed effort will build upon the current state of the science/knowledge gaps. Does the research plan reflect a broad understanding of the underlying science and of comparable work being done within the scientific community (i.e., state of knowledge in industry, academia, other federal laboratories, internationally)? Does this project build upon work being conducted elsewhere? Explain how this is basic research.
- g. **Effort Description:** The general plan of work including the broad design of activities to be undertaken. Provide a clear description of experimental methods and procedures and plans. Describe the research plan to test the hypothesis that will explain the phenomena to be investigated. Describe the intended research effort (i.e., research objectives and exit criteria) for each 12-month period up to 36 months total. If the proposed research effort cannot be accomplished within a 36-month period, explain why and describe the intended research objectives and exit criteria for the additional time period requested to complete the work. Describe the major technical tasks and technical milestones. For each research task, describe the research methods and techniques that will be employed to test the hypothesis. Is the use of modeling, simulation, and/or experimentation appropriate and well-suited to making advancements in new knowledge? Will the proposed methods create new capabilities or enhance existing capabilities? Are the experimental capabilities, in terms of parameters that can be measured, comparable to that of theory to predict

these parameters at the same level of accuracy? Are there any opportunities to bring theory and experiment into better balance?

- h. Effort Timeline:** Specify timelines and deliverables for each activity. List risks associated with each activity and methods for reanalyzing and modifying the project plan if necessary. A milestone is NOT a product (i.e. journal article, conference proceeding, etc.). A milestone is an achievement and/or discovery of the research and could be associated with a Go/No-Go decision. Go/No-Go decisions should also be noted on the timeline (bold outline).

Task/Milestone	Year 1				Year 2				Year 3			
Task 1 <Title>												
1.1 <Title>												
1.2 <Title>												
Milestone												
Product												
Task 2 <Title>												
2.1 <Title>												
2.2 <Title>												
2.3 <Title>												
Milestone/Product												
Task n <Title>												
n.1 <Title>												
n.2 <Title>												
Milestone/Product												

- i. Evaluation Plan/Exit Criteria:** A good evaluation plan appropriate to the scale of the project will provide information as the project is developing and will determine how effectively the project has achieved its goals. How you intend to evaluate the final project and how you will determine whether this project met your scientific expectations. Explain how you will know if you have answered the scientific question addressed and also how any go/no go decisions, if included, will be evaluated.
- j. Dissemination Plan:** Include plans for making project results available to other researchers. Explain in detail how you will disseminate information on the success and content of your project to others. List the peer reviewed publications that will be prepared as a result of the research conducted from this project. A final closeout report submitted via the ERDC Programs Office will be MANDATORY at the end of the last FY of the effort.
- k. Management Plan:** Sufficient detail should be provided to allow for reviewers to evaluate whether the plan includes appropriate expertise and infrastructure to perform the research objectives detailed in the description of the project. Describe the organization of the project staff and methods of assessing performance. For each member of the team, include a description of responsibilities, percent effort, and explain why a given position is necessary for the completion of the proposed

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research. Include who will take over the project (Co-PI) should the submitting PI change over the course of the effort. All researchers are not Co-PIs.

- I. **Bibliography:** Include a bibliographic listing of the key literature citations that serves as the basis for this research project. (Does not count toward the page limit.)

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m. Resubmission: If this proposal is not a resubmission of a prior proposal, omit this section. If all or portions of this proposal have been submitted in the past, provide explanation for the resubmission and documentation of any changes or revisions. The format should be similar to a 'Response to Reviewers' for referred journal articles and should not exceed one (1) page in length. This explanation does not count against the three (3) page limit for Pre-Proposal submissions or ten (10) page limit for Full Proposal submissions. Failure to complete this section, if applicable, will disqualify the proposal for re-evaluation.

Laboratory Director endorsement is required to ensure proposals have been evaluated by the laboratory and meet the criteria for basic research.

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CURRICULUM VITAE

(Limit to 2 pages for each ERDC participant)

- a. Title:**
- b. Name:**
- c. Current Position, Department and Division:**
- d. Education:** (Bullet format example)
 - 2000 Ph.D. (Degree), Name of School, City, State, Country
 - 1995 M.S. (Degree), Name of School, City, State, Country
 - 1985 B.S. (Degree), Name of School, City, State, Country
- e. Relevant Professional Experience or Employment:** (Bullet format example)
 - 2015
 - 2010
- f. Relevant Publications:** (Bullet format bibliographic citation example)
 - Doctor, B.P., and Maxwell, D.M., New Approaches to Medical Protection Against Chemical Warfare Nerve Agents, New York: CRC Press, 2001, pp. 191-214
 - List up to 5 significant related publications.
- g. Invention Disclosures and Patent Applications:** (Bullet format example)
 - 2015
 - 2010
- h. Research Achievement and Recognition Awards:** (Bullet format example)
 - 2015
 - 2010
- i. Previous Research Results:** Report results from prior ERDC basic research (6.1) projects. If any PI or co-PI identified on the project has received ERDC 6.1 funding in the past five years, information on the award(s) is required.
- j. Alphabetized List of Non-ERDC/External Collaborators:** (Past 48-months)
 - Co-editor names and their current organizational affiliations
 - Graduate advisor/post-doc sponsor names and their organizational affiliations
 - Names of individuals for whom the PI has been a thesis advisor

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COST ESTIMATE


Title of Proposed Project:											
*3% estimated labor rate increase built into calculations.	Laboratory Departmental		30.00%	FY23		FY24		FY25		TOTAL	
	Army G&A		10.00%								
DIRECT LABOR PARTICIPANTS	ROLE	LAB	FULLY BURDENED LABOR RATE*	TOTAL HOURS	TOTAL COST	TOTAL HOURS	TOTAL COST	TOTAL HOURS	TOTAL COST	TOTAL HOURS	TOTAL COST
Dr. John Smith	PI	CERL	\$139.50	1000	\$139,500	1,130	\$162,364	0	\$0	2130	\$301,864
Dr. Jane Doe	Co-PI	CRREL	\$110.70	850	\$94,095	600	\$68,413	0	\$0	1450	\$162,508
Bill Jones	Technician	CERL	\$95.30	0	\$0	1,330	\$130,551	0	\$0	1330	\$130,551
Mary Adams	Admin	CERL	\$90.00	28	\$2,520	43	\$3,986	0	\$0	71	\$6,506
			\$0.00	0	\$0	0	\$0	0	\$0	0	\$0
			\$0.00	0	\$0	0	\$0	0	\$0	0	\$0
			\$0.00	0	\$0	0	\$0	0	\$0	0	\$0
			\$0.00	0	\$0	0	\$0	0	\$0	0	\$0
			\$0.00	0	\$0	0	\$0	0	\$0	0	\$0
TOTAL DIRECT LABOR				1878	\$236,115	3103	\$365,314	0	\$0	4981	\$601,429
TRAVEL COSTS		PURPOSE			TOTAL COST		TOTAL COST		TOTAL COST		TOTAL COST
		Field Site Visits			\$9,442		\$0		\$0		\$9,442
		Data Analysis (offsite)			\$0		\$0		\$0		\$0
		Conferences			\$0		\$1,767		\$0		\$1,767
		Consultations			\$0		\$0		\$0		\$0
		Workshops			\$0		\$0		\$0		\$0
		Training			\$0		\$0		\$0		\$0
		Briefings			\$0		\$0		\$0		\$0
		Other			\$0		\$0		\$0		\$0
TRAVEL					\$9,442		\$1,767		\$0		\$11,209
TOTAL TRAVEL BURDENED					\$13,219		\$2,474		\$0		\$15,693
EQUIPMENT and SUPPLIES:		ITEM TYPE			TOTAL COST		TOTAL COST		TOTAL COST		TOTAL COST
		Laboratory Supplies			\$0		\$0		\$0		\$0
		Software			\$0		\$0		\$0		\$0
		Licenses			\$1,100		\$0		\$0		\$1,100
		Publishing/Editing/Review			\$0		\$3,380		\$0		\$3,380
		Books			\$0		\$0		\$0		\$0
		Field Supplies			\$0		\$0		\$0		\$0
		Computer Equipment			\$0		\$0		\$0		\$0
		Instrumentation			\$0		\$0		\$0		\$0
		Conference/Workshop Registration			\$0		\$615		\$0		\$615
		Other			\$0		\$0		\$0		\$0
EQUIPMENT and SUPPLIES					\$1,100		\$3,995		\$0		\$5,095
TOTAL EQUIPMENT and SUPPLIES BURDENED					\$1,540		\$5,593		\$0		\$7,133
CONTRACT/MIPR		PURPOSE			TOTAL COST		TOTAL COST		TOTAL COST		TOTAL COST
Contract		Consultant			\$0		\$12,480		\$0		\$12,480
					\$0		\$0		\$0		\$0
					\$0		\$0		\$0		\$0
					\$0		\$0		\$0		\$0
CONTRACTING					\$0		\$12,480		\$0		\$12,480
TOTAL CONTRACTING BURDENED					\$0		\$17,472		\$0		\$17,472
SUBTOTAL PROJECT COST					\$250,874		\$390,853		\$0		\$641,727
FIF/2363		3%			\$7,759		\$12,088		\$0		\$19,847
TOTAL PROJECT COST					\$258,633		\$402,941		\$0		\$661,574

Note: The labor rate is the fully-loaded labor burdened rate, which includes the current effective rate, and is found in CEFMS. The fully-loaded labor burdened rate includes benefits, the laboratory departmental rate, and G&A rate. For the non-labor costs, the most current military G&A rate should be utilized. Researchers should prepare their cost estimates with coordination from their administrative assistants/budget analysts and with support and approval of their branch chiefs. For planning purposes, the FY21 military G&A rate is 10.0%; and the FY21 departmental rates are CERL = 30.0%, CHL = 37.0%, CRREL = 36.0%, EL = 32.0%, GSL = 30.0%, ITL = 33.0%, and GRL = 28.0%. These FY21 rates can be used for initial planning purposes, but the rates at the time of submission should be used for the cost estimate, and these rates can be obtained from your administrative assistants/budget analysts and branch chiefs who are being actively engaged with to complete this cost estimate. **Adjustments for salary increases are already incorporated to the direct labor formulas.**

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MARKETING CHART

<div> <div>Basic Research</div> <div>Strategic Research Area</div> </div> <div> <div>LEVEL</div> <div>1</div> <div>2</div> <div>3</div> </div> <div> <div>← Arrow does not move</div> </div>		<div>CUI</div> <div>Project Name</div>																									
<div>Purpose</div> <div>  </div> <div> <ul style="list-style-type: none"> Bullets addressing Heilmeier Qs 1, 2, and 4: "Why" (Refer to notes section below for Heilmeier questions). </div>		<div>Progress</div> <div> <ul style="list-style-type: none"> Measure of success/impact: Refer to notes section for key elements to consider here. This should be quantitative AND qualitative. Go/no-go criteria: What is the quantitative AND qualitative metrics the effort must meet, and the timeline for it to have a go/no-go decision? Addresses Heilmeier Qs 6 and 7. </div>																									
<div>Project Design</div> <div> <ul style="list-style-type: none"> Bullets addressing Heilmeier Qs 3 and 5: "How" (Refer to notes section below for Heilmeier questions). </div>		<div>Timeline and Funding</div> <table border="1"> <thead> <tr> <th>Milestones</th> <th>FY23</th> <th>FY24</th> <th>FY25</th> </tr> </thead> <tbody> <tr> <td>Milestone 1</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Milestone 2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Milestone 3</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total Funding/yr (6.1) \$M</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total (6.1) Funds \$M</td> <td colspan="3">\$M</td> </tr> </tbody> </table> <div> <ul style="list-style-type: none"> Addresses Heilmeier Questions 7, 8, and 9 In-house expertise/percentage of work in-house </div>		Milestones	FY23	FY24	FY25	Milestone 1				Milestone 2				Milestone 3				Total Funding/yr (6.1) \$M				Total (6.1) Funds \$M	\$M		
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<div>US Army Corps of Engineers • Engineer Research and Development Center</div> <div>CUI</div> <div>49 1</div>																											

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QUESTION CHART

Basic Research	LEVEL	1	2	3	Font Size 12	Font Size 11	Font Size 8	Font Size 28	Project Name
Strategic Research Area									
<p>Last update (DD-MMM-YY) Status: Proposed</p> <p>1. What is the problem?</p> <ul style="list-style-type: none"> • Enter data • What is the research problem? State concisely the research objective and/or question to be answered by the research objective. <p>2. What are the barriers to solving this problem?</p> <ul style="list-style-type: none"> • Enter data • What are the key scientific barriers to success? • What is the state of the knowledge? <p>3. How will you overcome those barriers?</p> <ul style="list-style-type: none"> • Enter data • What is the testable hypothesis? • What is the technical approach/research plan? • What are the research methods? <p>4. What are the anticipated results and value of this research?</p> <ul style="list-style-type: none"> • Enter data • What are the research exit criteria? • What is the significance and impact to the scientific field or discipline if the research goals are achieved? <p>5. What is innovative about this research?</p> <ul style="list-style-type: none"> • Enter data • Innovation – Solving relevant problems in useful and unexpected ways. • What makes this research innovative, original, and high risk? <p>6. What is your publication plan?</p> <ul style="list-style-type: none"> • Enter data • Target date for submission – Working title. <i>Peer reviewed publication the paper will be submitted to.</i> <p>7. Transition plan.</p> <ul style="list-style-type: none"> • Enter data • How will the research be transitioned to the core applied research (6.2) program if the research goals are achieved? <p>8. Collaboration across ERDC, academia, and/or commercial firms.</p> <ul style="list-style-type: none"> • Enter data • ERDC collaborators? • Other participants? 									
<p>PE/Project/Task: 0601102/AB2/##</p> <p>US Army Corps of Engineers • Engineer Research and Development Center</p>									

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NARRATIVE CHART

Basic Research	LEVEL	1	2	3
Strategic Research Area				

Font Size 12

Font Size 11

Font Size 8

Font Size 28

Project Name

Last update (DD-MMM-YY)

Status: Proposed

The Narrative chart is a one-page project summary that will accompany the Marketing and Question charts. This chart was recommended for inclusion during the July 2010 6.1-6.3 Program Review and modified in July, 2019 to meet the current priorities of the Army.

This chart along with the accompanying Marketing and Question charts will be used during the basic research portfolio management review workshop. It is intended to document responses to the following questions to assist the panelists during the review, and serves as an outline for the 5 minute scripted project overviews (or "elevator speeches") Principal Investigators (PIs) will be asked to present. Responses should be concise and to the point.

Q1. Describe the research objective.
Q2. What is the current state of the science and how will you advance the state of the science?
Q3. What is the toughest technical challenge in the work?
Q4. What future applications could result from this research?
Q5. What other organizations are pursuing this research?
Q6. What makes this research high risk?
Q7. How could this research develop future capabilities for ERDC?
Q8. Describe the research team and plan.
Q9. Is there adequate funding, equipment, and facilities to complete this research as planned?
Q10. Why must the Army invest in this research?

Font is Arial 10. Use no italics or bolding in the body of the narrative. Spell out all acronyms. The bottom margin has space for latest version date and POC information.

Funding (\$K)	FY 23	FY24	FY25
PE/Project 0601102/AB2	200	400	400

PI	Co-PI	I
Name	Name	Name
ERDC Lab Name	ERDC Lab Name	ERDC Lab Name
Phone number	Phone number	Phone number
Email address	Email address	Email address

US Army Corps of Engineers • Engineer Research and Development Center

CUI

3

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OPTIONAL CHART

Basic Research	LEVEL	1	2	3
Strategic Research Area		Font Size 12	Font Size 11	Font Size 8

Font Size 28

Free Form Chart (optional)

Last update (DD-MMM-YY)

- This chart should be used to say what you would like to say about your proposed research your way.
- This chart can contain any information useful to convey the content and implications of the proposed research.

US Army Corps of Engineers • Engineer Research and Development Center

CUI

4

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OPTIONAL CHART

Basic Research		LEVEL	1	Font Size 12	CUI	Font Size 28
Strategic Research Area			2	Font Size 11	Response to Reviewers (optional)	
			3	Font Size 8		

Last update (DD-MMM-YY)

- This chart should be used to address comments you received from internal and external reviewers.
- This chart can contain any information useful to convey the content and implications of the proposed research.

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CUI

5

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