Lessons Learned for Solicitation Success

An insider perspective on how to increase the probability of success in the HPC4Mfg program.

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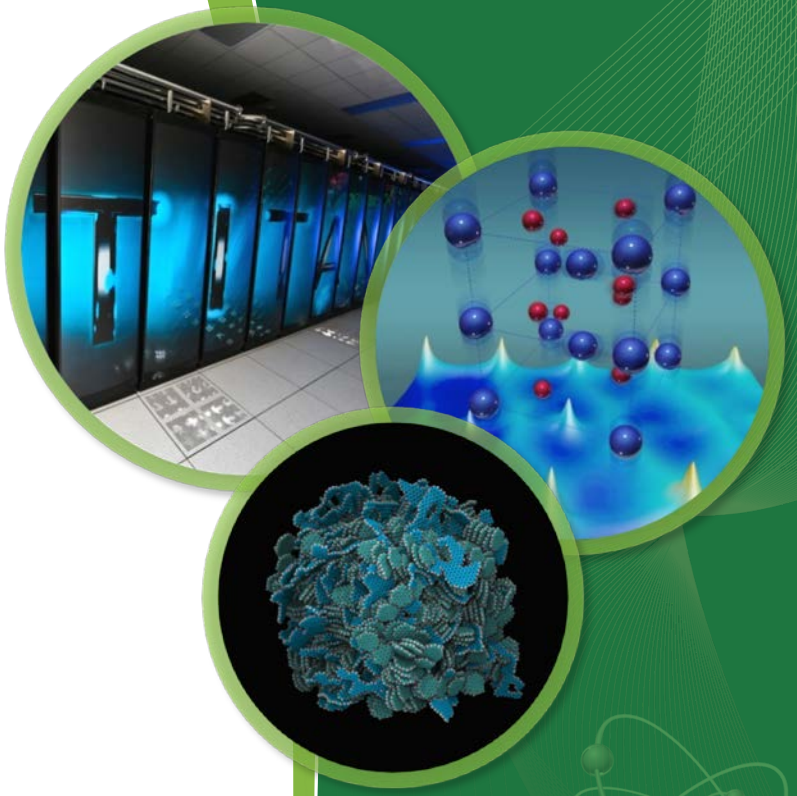

HPC4Manufacturing Industry Engagement Day
March 2-3, 2017
San Diego, CA

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Respond to the solicitation

Address key challenges in U.S. manufacturing through modeling, simulation, and data analysis	Pay attention to dates and other program requirements
• improve energy efficiency • increase productivity • reduce design cycle time • enable next-generation technologies • test control system algorithms • investigate intensified processes • lower energy use / costs • accelerate innovation	• limited to entities that manufacture in the U.S. • 20% cost-share (“funds-in” and/or “in-kind”) • broad national impact • short-form Cooperative R&D Agreement (CRADA) • no modifications • funding is to National Laboratory Staff, not to companies

Two-page concept papers should clearly state challenge and impact

Extremely important	• Challenge faced by your company • Why and how you think advanced simulation can help solve it • Impact of overcoming this challenge (more on this later)

Important	• What has your company done previously, both experimentally and in simulation
	• Why are DOE expertise and resources necessary to go beyond your capabilities
	  • Could this be done by an engineering services firm?
	  • Is this primarily a request for HPC cycles?
	• Amount and form of cost share
	  • Minimum (20%) or more? Funds-in or in-kind? Experimental data? Staff time?

Less critical (for this phase)	• Appropriate scope (can be addressed in the full proposal)

Full proposals have three major components

Challenge	What is the challenge your company / industry is facing?
Impact	Why is overcoming this challenge important, and to whom?
Plan	What will be done and how will it help to overcome this challenge?

Challenge: What is the challenge your company or industry is facing?

- What is the challenge, and why do you think HPC can help overcome this challenge?
  - It can be helpful to define this project in context of larger vision
  - But… be sure to clearly delineate this project and its role in the larger vision
- How do you currently use simulation?
  - Clearly describe current state of the art, both for your company and the broader community
  - What codes are you currently using? On what platforms?
  - Clearly explain why DOE expertise and resources are necessary to go beyond current capabilities
- What are the limitations that this project will overcome?
  - Increased resolution, 1-D to 2-D, 2-D to 3-D, physics coupling, bridging scales, process more data, reduce uncertainty, explore parameter space, develop / verify / refine reduced order models

Impact: Why is overcoming this challenge important, and to whom?

- Refer to the call for specific areas
- What will be the tangible form of impact and how will be delivered?
  - Source code and/or simulation data (databases) – license? mechanism?
  - Publication(s) - process improvement, reduced-order models, etc.
- Will the impact be significant for your company, your industry, or more broad?
  - Any of these are acceptable, but broad impact is more desirable
- Be as quantitative as possible, but resist the temptation to exaggerate
  - Inflating impact can negatively impact score

Plan: What will be done and how will it help to overcome this challenge?

- Ensure that proposed work is appropriate for both time and budget
  - Clearly defined objective(s), without mortgage
- Define roles for both industry and DOE partners
  - The benefit of this collaboration for both should be apparent
- Describe software to be used
  - Commercial, univ., or lab-developed?
  - Cost, license, export control category?
  - HPC readiness – supported platforms, scalability, prior performance on DOE systems
  - Amount of development required

Plan: What will be done and how will it help to overcome this challenge?

- What is the validation plan?
  - Does experimental data exist? If not, is there a plan to obtain?
  - Keep in mind that these projects should not include large experimental components
  - It is OK to be capability development / demonstration only, with validation as future effort
- Specify HPC resource requirements
  - They should flow directly from the challenge problem and proposed solution approach
  - Clearly indicate why DOE resources are required (job size, number of jobs, data)
  - Clear estimate of requirements improve the proposal's credibility
  - It is OK, but not necessary, to request specific computer platform(s)

Bring us your challenges

Challenge	What is the challenge your company / industry is facing? • Why do you think advanced simulation can help overcome this challenge? • How do you currently use simulation? • What are the limitations that this project will overcome?
Impact	Why is overcoming this challenge important, and to whom? • Refer to the call for specific areas • What will be the tangible form of impact and how will be delivered? • Be as quantitative as possible
Plan	What will be done and how will it help to overcome this challenge? • Ensure that proposed work is appropriate for both time and budget • Define roles for both industry and DOE partners • Describe software to be used • What is the validation plan? • Specify HPC resource requirements

Questions?

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