

CANEUS Pilot Project Concept Papers

CANEUS ID No.	2004-A07
Name	Multifunctional Composite Materials with MNT Embedded Sensors
RFQ Submission Date	February 19, 2004
Budget:	Up to US \$35,000
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1. Content:

This Concept Paper will make the case for a pilot project aimed at the development of multifunctional composite materials with MNT embedded sensors.

Multifunctional composite materials can be produced by mixing nanotubes, nanowires, nanoparticles, fullerenes, etc in polymer, carbon, ceramic, or metal matrices. By embedding a variety of MNT-based sensors and actuators within these composites, one can create multi-functional, "smart" materials. Numerous potential applications exist for such multi-functional structures. The focus of this pilot project is the fabrication, characterization and prototype design for such multi-functional composites, which can deliver previously unavailable capabilities for structural health or failure monitoring. The Concept Paper will provide the conference participants with the technical and programmatic background necessary to evaluate the current status in terms of technological maturity, key technology developers of multifunctional composite materials with embedded sensors, potential investors, aerospace end-applications, market potential and the challenges involved in this technology development.

2. Scope:

This Pilot Project Concept Paper will be used to guide discussions at the CANEUS 2004 workshops aimed at transitioning MNT concepts to systems. At a minimum the Concept Paper will contain the following:

2.1. Background Information:

- Description of the current state-of-the-art in multifunctional composite materials with embedded sensors and actuators.

- Proposed approach and attendant benefits over the current state-of-the-art
- Survey of leading organizations involved in the development of multifunctional composite materials. Parameters to be examined include technical and commercial background as well as strengths and weaknesses
- Key application areas and market segments for multifunctional composite materials with embedded sensors and actuators. If available, the sizes of these market segments should be included
- Description of major trends and consequent scenarios impacting the development of multifunctional composite materials.

2.2. Recommendations and Implications for CANEUS:

- Justification for a pilot project aimed at the development of multifunctional composite materials with embedded sensors and actuators
- Recommended approach for the development of these multifunctional composite materials and their attendant benefits over the state-of-the-art
- Proposed implementation of the pilot project and metrics for evaluating progress
- Proposed teaming arrangement options and descriptions of complementary expertise and facilities
- Intergovernmental agreements that could impact the proposed development of multifunctional composite materials
- Identify the potential governmental, industrial and institutional sources of funding
- Overview of relevant current intellectual property status for multifunctional composite materials development

- Plan for expansion of the proposed pilot project into full-scale commercial development
- Potential non-aerospace applications.

3. Deliverables:

Potential bidders will have to comply with the following deliverables:

1. Mid project status report with preliminary findings (PowerPoint) within 6 weeks from the project commencement
2. Final report – Draft (PowerPoint) within 9 weeks from the project commencement
3. Final report – Draft (Word) within 10 weeks from the project commencement
4. Final report (Word) within 12 weeks from the project commencement
5. Supporting documentation including references, interview notes, white papers, exhibits and links (classified by relevant subject area and updated with each deliverable)

4. Proposal Format & Evaluation Criteria:

Proposals must be submitted in the following format for evaluation.

Part 1	Proposer's contact information including name, address, phone, e-mail and website
Part 2	Brief description demonstrating the proposer's existing knowledge of the content and subject matter of the Concept Paper (including examples of past work in the topic area)
Part 3	Brief description of the methodology and work plan including a list of potential sources of information
Part 4	Brief description of the educational qualifications and expertise of the individual or team
Part 5	References from previous clients
Part 6	Budget and allocation of costs

Proposals will be evaluated using the following main criteria along with various compliance requirements described within this document

a. Technical Merit:

- How well does the proposal match the stated objectives?
- Feasibility of the proposed approach (interview process, literature search, methodology in deriving the conclusion, etc.) in generating the report

b. Proposer Qualification:

- How well qualified (experience, demonstrated track record, current activities, etc.) is the proposer / team in pursuing the work?
- Does the proposer have sufficient resources to pursue the work?

c. Commercial Criteria:

- Price
- Availability of key resources
- Other commercial issues

5. Other Terms and Conditions

CANEUS will have full and exclusive rights to the interim and final reports. CANEUS can use the reports as is or repackage them as it sees fit including the creation of derivative documents with no rights or additional proceeds to the report author. At CANEUS' option, additional phases can be granted to the successful bidder.

6. Proposal Submission Process

The full proposal is due by February 19, 2004. The Proposal must be submitted electronically to the CANEUS at proposal@caneus.org. CANEUS has the right to accept or reject any proposal at its discretion.