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**The Technology Collaborative, Inc.**  
**Technology Commercialization Initiative (TCI)**

**Request for Proposals #20**



***THE TECHNOLOGY COLLABORATIVE***  
Accelerating Digital & Robotic Innovation.

***DRAFT Proposal Submission Date: ..... October 15, 2010 5:00 PM EST***  
***FINAL Proposal Submission Date: ..... December 17, 2010 5:00PM EST***  
***Award Announcement Date: ..... on or about March 1, 2011***

*All awards are subject to the terms of a mutually acceptable Statement of Work, availability of adequate funds, and any applicable government regulations, institutional policies, and pre-existing agreements with TTC.*

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## Technology Commercialization Initiative

### Request for Proposals #20

#### IMPORTANT DATES & FACTS:

- ✓ *Maximum proposed project duration*..... *12 months*
- ✓ *Maximum TTC dollars per project*.....*\$120,000*
- ✓ **NOTE:** This RFP20 encourages proposals from both universities and companies in PA, however, commercial submissions will only be accepted from PA firms who have either: a) never received TTC TCI funding or b) received less than \$250,000 of total funding, as prime- and/or subcontractor, from prior TTC TCI solicitations.
- Proposal Idea Form Submission (optional)..... by September 17, 2010
- **DRAFT Proposal Submission (required)**.....**October 15, 2010 5:00 PM EST**
- TTC Feedback on Draft Proposal..... on or about November 12, 2010
- **FINAL Proposal Submission (required)**.....**December 17, 2010 5:00 PM EST**
- Matching Effort Letters Due (required) ..... January 14, 2011
- **Award Announcement:** ..... **on or before March 1, 2011**

Through a competitive selection process, The Technology Collaborative (TTC) intends to award funding for one or more projects that address key engineering design challenges, show a high degree of innovation and, most importantly, identify a clear path to commercialization with the potential to significantly impact technology related companies in the Commonwealth of Pennsylvania.

#### *Proposals are solicited from:*

- *start-up companies,*
- *established companies, and*
- *university researchers/groups*

in Pennsylvania for technology commercialization projects that advance the state of the industry in digital and analog electronics and robotic technologies, primarily through the design and early prototyping of embedded system and hardware product concepts for the digital multimedia, digital networking, service robotic, and cybersecurity markets. ***Collaborative projects between these groups are strongly encouraged.***

TTC is a nonprofit organization funded in part by the Commonwealth of Pennsylvania and a consortium of member firms, along with the participation of Carnegie Mellon University, University of Pittsburgh, Penn State University, the Pittsburgh Regional Alliance, the Pittsburgh Technology Council, and the Allegheny Conference on Community Development. (For further information, see <http://www.techcollaborative.org/>.) TTC's programs aim to establish a leading industry presence in Pennsylvania focused initially on target market segments growing around digital multimedia, digital networking, and robotic applications. Key to the success of this effort will be the region's ability to drive rapid and continuing progress in technology development and commercialization. The Technology Commercialization Initiative is a partnership among member firms, regional universities, and the Commonwealth to identify technology challenges within these target market segments and to create

precursor design and embedded-system solutions that reach beyond the current generation of available products and services.

**Technical Scope:** TTC is particularly interested in supporting short- to medium-term projects (6 to 12 months) that build on and extend Pennsylvania's core technology competencies in areas of interest to its member firms. New product concepts resulting from this work may be further developed by these firms or marketed through the creation of a new commercial enterprise.

***Examples of technical areas of interest to member companies include:***

- Human-computer interface technologies – voice recognition, graphics interfaces, information visualization, etc.; interfaces between personal communication devices or other electronic appliances and the network infrastructure; rehabilitation or assistive-living applications of these technologies.
- Developments in next generation wired and wireless network systems that will interface among digital TV, home appliances, personal communication devices, and other electronic devices. New network and distribution technologies.
- Robotic technologies - Perception, vision & sensing; data fusion; mapping & navigation; positioning; collaborative/cooperative behavior; systems integration; intelligent mobile power; composite materials; new concept prototypes; rehabilitation or assistive-living applications of these technologies.
- Novel DSP/multi-core designs and implementations for advanced audio and video compression focused on improved quality and speed within existing bandwidth limitations; novel methods for real-time audio encryption and decryption, noise identification & suppression, and multi-speaker identification; Hardware/software for practical Voice over IP implementation; error resiliency and correction; video encoding performance monitoring; hardware versus software coding/decoding implementations.
- Cybersecurity – network tools, internet tools, information assurance, data protection, digital rights management, novel methods for real-time encryption and decryption, and related topics.
- Mobile systems and low power – new wired or wireless mobile data communication devices, mobile computing devices; RFID technologies and systems; core IPs for wired/wireless Internet access; low power hardware and software design and implementation; advanced mobile energy sources; rehabilitation or assistive-living applications of these technologies.
- Network Storage – devices, networking, security protocols, novel fault tolerance/redundancy methods, file systems and storage management for networked storage.
- Novel low power, low voltage (1.8 volts or less) analog circuit blocks for mixed signal integrated circuits, e.g. op amps, comparators, analog-to-digital converters, digital-to-analog converters, voltage references, and related topics.
- Advanced chip design methodologies and tools – novel design flows; HW/SW co-design environments and code encryption methods (e.g. FPGA/CPLD encoding protection); automated mixed signal design implementations; novel CAD environments for SoC and/or for bridging chip and MEMs device design.
- SoC-related MEMS – novel designs, design tools and methodologies, fabrication methods, prototypes, as applied in a VLSI context.

Further insight into TTC member's technology interests can be obtained by reviewing the current list of TTC-funded programs at [http://www.techcollaborative.org/default.aspx?id=funded\\_projects](http://www.techcollaborative.org/default.aspx?id=funded_projects). **If unsure whether a proposed idea fits any of these categories or to obtain additional information regarding TTC technology interests, please contact Chuck Brandt, TTC's CTO, to discuss (see page 7).**

**Bidders Briefings:** In the weeks following release of this RFP, TTC will be holding a few briefings for those interested in submitting a proposal. These briefings will provide a detailed overview of the submission and evaluation process, as well as a forum for getting your questions answered. Please check the TTC website at [http://www.techcollaborative.org/default.aspx?id=download\\_rfp](http://www.techcollaborative.org/default.aspx?id=download_rfp) for the most up-to-date information on dates, times, and locations.

**Proposal Ideas:** If you are new to TTC's proposal process or just unsure which TTC member companies might be interested in your proposal, you can submit a TTC Proposal Idea Form to the CTO. This one-page form, available on TTC's website at [http://www.techcollaborative.org/default.aspx?id=download\\_rfp](http://www.techcollaborative.org/default.aspx?id=download_rfp), provides an efficient means for you to summarize the key points of your proposed project and get feedback from TTC staff and interested TTC member companies. **Proposal idea forms must be submitted via email to the TTC CTO no later than September 17, 2010 to allow enough time for viable feedback. Note that submitting a proposal idea form, while helpful, is not a required element of the proposal submission process.**

**Program Plan:** Multiple awards, totaling up to approximately \$1,200,000 are expected to be made on or about March 1, 2011. **Individual requests for TTC funding in this round must not exceed \$120,000.** Universities and commercial firms located in Pennsylvania are eligible to propose and carry out projects. Collaborative efforts are encouraged. **NOTE: For this RFP20, commercial submissions will only be accepted from PA firms who have either: a) never received TTC TCI funding or b) received less than \$250,000 of total funding, as prime- and/or subcontractor, from prior TTC TCI solicitations.** Matching effort in direct support of the proposed program is required: 1) for university-based programs at a minimum level of 25% of total program costs (e.g. \$160K total program cost - \$40K matching funds = \$120K TTC funding request) or 2) for company-based programs at a minimum level of 33% of total program costs (e.g. \$180K total program cost - \$60K matching funds = \$120K TTC funding request). Examples of acceptable types of matching effort include cash, in-kind labor or laboratory expense, tuition waiver, and overhead rate reduction. Contact TTC's CTO with any questions about acceptable types of matching effort. **Proposed programs must not exceed 12 months in duration.** Shorter-term programs (e.g. 6-12 months) are encouraged. The final duration and funding level awarded to individual projects will be determined by what the consortium believes is appropriate to the proposed tasks. As a result of this and future project competitions, TTC expects to support a portfolio of projects of varying character and complexity, each to be carried out by a team with complementary expertise. The frequency and funding levels of future solicitations will be determined based on TTC members' interests and the available funding. In the future, the consortium also anticipates focused proposal solicitations for projects that address member needs.

**Proposal Format:** Proposals must reference TTC RFP20 and must be no longer than **10 pages** of 1.5-spaced, 10-pt type, with .75 inch margins including all figures, tables, and supporting material. Proposal support letters (see #8 below) electronically attached at the end of the document are not included in the 10 page count. Web sites and other references may be cited for additional background information.

**The following proposal outline is required:**

1. **Title Page** – include title, proposing institutions, technical and administrative contact information (phone, mail, & email), overall program cost, matching effort contributed and source(s), requested TTC funding, and overall program duration.
2. **Executive Summary** – overall technical project description at a level that will be accessible to a technically competent non-specialist. Include a summary of project length, cost, key performance milestones, and deliverables. Proposers should identify the novelty/originality in their proposal, (whether technical, market-focus, or both) and state how, in what areas, or in what form and fashion their work will or could be used by industry. If applicable, be sure to identify the proposal as being from a newly formed company or, if successful,

lead directly to the establishment of a new company.

3. **Technical Background** – the proposed work should be placed in the context of similar, related, and competing efforts being carried out worldwide.
4. **Proposed Program** – sufficiently detailed for reviewers to assess the proposed work according to the evaluation criteria (see below). Emphasis should be placed on describing the special or unique new capability that could be provided by the project's expected deliverables, as well as the applicability to TTC target markets.
5. **Program Plan, Statement of Work (SOW), Milestones, and Deliverables** – include overall program plan (e.g. Gantt chart), Statement of Work with brief task descriptions, quarterly performance milestones, and specific final program deliverables. Proposals should state clearly the expected duration of the project and a rationale for it.
6. **Commercialization Plan** – a clear and concise description of the proposed work's market potential and the planned path to commercialization. The description **needs to, at a minimum**, address the following basic questions: a) **Who will be doing the commercialization?** b) **What is the timetable for commercialization?** c) **How will the plan be carried out?** d) **How much (in round numbers) will the commercialization cost? and** e) **What are the initial target markets and their approximate size?** The potential economic development impact (e.g. company collaborations, startups, spinouts, new or enhanced product offerings, job creation, licensing opportunities, etc.) and any related special circumstances should be clearly described. **Additional guidance for completion of this section** can be found by downloading the "Commercialization Plan Tips" document at [http://www.techcollaborative.org/default.aspx?id=download\\_rfp](http://www.techcollaborative.org/default.aspx?id=download_rfp).
7. **Budget Summary** – proposed direct and indirect costs for personnel, materials, equipment, travel, subcontractors, consultants, and/or suppliers, and facilities as well as matching effort that will be contributed and by whom. TTC will provide a budget template for final proposal submissions.
8. **Proposal Support Letters** – letters from current and/or prospective customers in support of the proposed project must be submitted on institution letterhead from authorized personnel. **These pages are not included in the overall page count but should be electronically attached at the end of the final proposal document prior to submission in order to be read by TTC reviewers.**
9. **Matching Effort Commitment Letter** – A letter describing the type and total amount of matching effort must be submitted on institution letterhead from authorized personnel. **This page is not included in the overall page count and can be sent under separate cover via overnight mail to TTC's CTO. Matching Effort letters must be received at TTC offices no later than COB Friday, January 14, 2011.**

Summary biographical information on project participants should be included within the overall page limit; as with general background, proposers may direct reviewers to web sites where they have posted their complete curricula vitae. Any proprietary information contained in the proposal must be clearly identified as such. Any pre-existing or third-party intellectual property that will be used in the project or contained in the deliverables must be clearly identified.

**Proposal Submission Process:** To be considered for a TTC Award, a two-step process is **required**:

#### **STEP 1:**

Complete **DRAFT** proposals must be uploaded and accepted at TTC's website ([http://www.techcollaborative.org/default.aspx?id=upload\\_proposal](http://www.techcollaborative.org/default.aspx?id=upload_proposal)) before **5:00 PM EST on OCTOBER 15, 2010**. You will be required to fill out TTC's on-line executive summary form immediately prior to uploading your draft proposal document. A DRAFT proposal must follow the proposal outline described above and be as close to the final document as possible. This document must include, at a minimum, the following proposal sections: Title Page, Executive Summary, Program Plan, Commercialization Plan, and Budget Summary. Draft proposals must be submitted using either MS Word (.doc or .docx) or Adobe Acrobat (.pdf) formats. A confirmation email from TTC will be sent

following a successful submission. **TTC STAFF WILL PROVIDE FEEDBACK VIA EMAIL ON SUBMISSIONS TO INDIVIDUAL PROPOSERS ON OR ABOUT NOVEMBER 12, 2010.** Note: This feedback is for the benefit of the individual proposers and will not be shared with final reviewers.

## **STEP 2:**

Complete **FINAL** proposals must be uploaded and accepted at TTC's website ([http://www.techcollaborative.org/default.aspx?id=upload\\_proposal](http://www.techcollaborative.org/default.aspx?id=upload_proposal)) before **5:00 PM EST on DECEMBER 17, 2010**. You will be required to fill out TTC's on-line executive summary form immediately prior to uploading your final proposal document. Proposals must be submitted using either MS Word (.doc or .docx) or Adobe Acrobat (.pdf) formats. A confirmation email from TTC will be sent following a successful submission.

**NOTE ON FINAL PROPOSALS:** We encourage and expect final proposals submitted to include improvements and expansions not in the original draft submission. However, final proposals that TTC determines to be substantively different from the draft submission will be considered non-responsive and rejected.

**Selection Process:** Award decisions will be made by TTC on the advice of its Technology Commercialization Advisory Board (TCAB). The TCAB is composed of consortium representatives, one from each of the member firms and universities, and is chaired by TTC's Chief Technology Officer (CTO). Corporate TCAB representatives are senior engineering managers with line responsibility for directing their organization's strategy, technology and product development efforts in areas related to TTC's target market segments. University representatives are senior faculty members with expertise in the technology areas fundamental to TTC's target market segments. TCAB members will review proposal submissions in advance of its review meeting, and proposers may also be asked to be available via telephone during that meeting (tentatively scheduled for February 2011 in Pittsburgh). **NOTE: In general, proposals are discussed in the order of their final submission (date & time) during the review meeting.** To ensure a fair and open competition, TCAB members representing proposing institutions will not take part in the review and selection deliberations involving their home institution. Finally, TCAB members will be required to respect the confidentiality of the information provided in proposals. TTC reserves the right to select for award all, some, or none of the proposals received. TTC also reserves the right to select portions of individual proposals for awards. TTC will announce its intentions to make awards following the TCAB review meeting.

**Evaluation:** Proposal review will be carried out according to the following criteria, those related to commercialization being of primary importance:

1. Viability of the Commercialization Plan. Reviewers will be asked to evaluate each proposal on the quality of this section, and explicitly consider how well the proposal addresses TTC's economic development mission. This evaluation will include how well the proposer makes his/her case in terms of: a) market potential, b) path to commercialization (who, when, how, how much) and, c) potential economic development impact (company collaborations, startups, spinouts, new or enhanced product offerings, job creation, licensing opportunities, etc.)
2. Company interest, especially TTC principal member companies, and plan/potential for commercialization of results;
3. Overall technical merit and level of innovation of the proposed work and the deliverable outcomes;
4. Proposer's capability and experience relevant to the proposed work;
5. Level of collaboration: Company-Company and Company-University. In particular, company-led projects which involve university collaboration will be given additional consideration;
6. Potential contribution and relevance to TTC's strategic technology areas of interest; and
7. Appropriateness of budget, project duration, and level of effort proposed. The level of matching effort/funds will be interpreted as a demonstration of the proposer's commitment to the project as well as its commercial viability.

As part of our overall job creation strategy, TTC actively encourages collaborative projects between industry and academia. **A proposal selected by TTC for an award will have, at a minimum, the**

**following attributes:**

1. A combination of the following factors:
  - a. A high-quality, technically relevant and innovative project with explicit deliverables and performance milestones
  - b. A high potential for economic impact in Pennsylvania as described in the Commercialization Plan. This potential can, for example, take the form of technology licensing, company creation, job creation, company collaboration(s), or product development or expansion.
  - c. At least one or more **corporate sponsors**. A corporate sponsor is defined as a for-profit entity that plans to use, license, or productize in a meaningful way the outcome of the project. In general, any corporate sponsor is GOOD, a PA-based corporate sponsor is BETTER, and a TTC principal member as corporate sponsor is BEST. **A proposal submitted from a company automatically counts as one sponsor of this requirement.** A good indicator of a serious sponsor is one willing to provide some of or the entire matching requirement.
2. Project matching funds (25% of total project costs for universities and 33% for companies).

**Project Management:** TTC's CTO will monitor progress of each project, schedule periodic reviews, and facilitate interaction among project participants and TTC members.

**IP Rights:** Intellectual property (IP) rights to the results of projects will be governed by agreements entered into between TTC and successful proposing organizations prior to making final awards. Companies are strongly encouraged to review the model Technology Commercialization Agreement and Statement of Work which can be downloaded from [http://www.techcollaborative.org/default.aspx?id=download\\_rfp](http://www.techcollaborative.org/default.aspx?id=download_rfp). TTC reserves the right to institute alternate types of agreements at any time prior to final contract negotiation; however the following points outline the typical IP elements of the current TTC research agreement:

1. ownership of the IP is retained by the company, researcher, or research institution.
2. non-exclusive, world-wide, royalty-bearing license to foreground IP to all TTC principal members.
3. non-exclusive, world-wide, royalty-bearing license to any required background IP to all TTC principal members.
4. the licenses listed in #2 and #3 above expire 24 months after TTC program completion.
5. non-exclusive, world-wide, perpetual royalty-free license to foreground and required background IP to TTC for demonstration purposes only.
6. a small, capped royalty obligation to TTC and the Commonwealth of Pennsylvania is required if funded IP is successfully commercialized by a company.
7. a 'Commitment to the Region' clause requiring payback of all project funds to TTC if a company moves its primary office(s) out of Pennsylvania within five (5) years following project completion.

**NOTE TO COMPANIES:** In keeping with the overall mission of TTC and its emphasis on technology commercialization, the organization is willing to consider proposals that promise other considerations that inure to the common benefit of TTC members in exchange for flexibility with the IP elements described above. Please contact TTC's CTO, Chuck Brandt, directly with any questions or concerns you may have.

**Points of Contact:** All correspondence and questions on this solicitation should be directed to the technical point of contact for this program, given below. Electronic mail is preferred.

**Technical Point of Contact:**

Chuck Brandt, Ph D.  
 CTO, The Technology Collaborative  
 2000 Technology Drive, Suite 102  
 Pittsburgh, PA 15219  
 Phone: 412-201-7422; Fax: 412-201-3444  
 E-mail: chuckb@techcollaborative.org

**Administrative Point of Contact:**

Ms. Kate Fisher  
 The Technology Collaborative  
 2000 Technology Drive, Suite 102  
 Pittsburgh, PA 15219  
 Phone: 412-201-7419; Fax: 412-201-3444  
 E-mail: katef@techcollaborative.org