

FUND FOR THE IMPROVEMENT OF POSTSECONDARY EDUCATION INTERNATIONAL CONSORTIA PROGRAM

Project Title Form

* Program:

Consortium Members -- U.S. Partners:

* Lead:

* Partner:

Partner:

Consortium Members -- Foreign Partners:

* Lead:

* Partner:

Partner:

Consortium Members -- Foreign Partners:

Lead:

Partner:

* Project Title:

*** Abstract of Proposal: (1000 Character Limit)**

This proposal is to form a network of US and European institutions focusing on delivering Technology Entrepreneurship Education (?TEE?). We label this joint effort "TECnet" (short for Technology Entrepreneurship & Commercialization network). The participating institutions are NC State University, Brown University, Loughborough University (UK) and COTEC (Portugal). Within TECnet we propose to benchmark policies and practices for high growth entrepreneurship education; we intend to create a network of collaborative web-based resources that will assist both the educators and the student projects within the partner institutions. TECnet will enable collaborative research on the outcomes of process-based TEE, and disseminate the results broadly in order to advance the field and build the network. Over the long term we expect to dramatically impact the creation of high growth start-ups. A total of four consortium meetings are planned over the 24 month grant period.

*** Select project format:**

- Four-year consortia project
- Two-year consortia project

Federal Funds Requested (\$):

* Year 1:

* Year 2:

* Year 3:

* Year 4:

* Total:

U.S. Department of Education Budget Summary

* 1. Program

EU-U.S. Program

* 2. Select One: Lead (fiscal agent) Partner

* 3. Name of the Institution/Organization:

North Carolina State University

Project Costs Requested from FIPSE:

Budget Categories:	Project Year 1 (a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Total (e)
4. Personnel (salary & wages)	3,375.00	6,750.00			10,125.00
5. Fringe Benefits (employee benefits)	473.00	945.00			1,418.00
6. Travel	12,245.00	6,083.00			18,328.00
7. Equipment (purchase)					
8. Supplies (and materials)	0.00	0.00			0.00
9. Contractual (enter partner totals here)	14,000.00	14,000.00			28,000.00
10. Other (equipment rental, printing, etc.)	2,500.00	5,000.00			7,500.00
11. Total Direct Costs (lines 4-10)	32,593.00	32,778.00			65,371.00
12. Indirect Costs* (8% of line 11)	2,407.00	2,222.00			4,629.00
13. Mobility Stipends					
14. Language Stipends					
15. Subtotal of Stipends (lines 13 + 14)					
16. Total Requested from FIPSE (lines 11 + 12 + 15) (These figures should appear on the Title Form)	35,000.00	35,000.00			70,000.00

Project Costs Not Requested from FIPSE:

17. Lead Partner Non-Federal Funds					
18. Subcontractor(s) Partner Non-Federal Funds					

Funds Requested by Foreign Partners:

19a. Total Requested from Canada					
19b. Total Requested from Mexico					
19c. Total Requested from Brazil					
19d. Total Requested from Europe	0.00	0.00	0.00	0.00	0.00

* Indirect Cost Information (To be completed by Your Business Office):

If you are requesting reimbursement for indirect costs on line 12, please answer the following questions:

(1) Do you have an Indirect Cost Rate Agreement approved by the Federal Government? Yes No

(2) If Yes, please provide the following information:

* Period covered by the Indirect Cost Rate Agreement: From: 07/01/2007 To: 06/30/2009

* Approving Federal Agency: OED Other (please specify): DHHS

(3) For Restricted Rate Programs (select one) - - Are you using a restricted indirect cost ratio that:

Is included in your approved Indirect Cost Rate Agreement? Or, Complies with 34 CFR 76.564(c)(2)?

SUPPLEMENTAL INFORMATION REQUIRED FOR DEPARTMENT OF EDUCATION GRANTS

1. Project Director

* Name:

Dr.

Edward

Baker

* Address:

Campus Box 7229

NC State University

Wake
County

Raleigh

NC: North Carolina

27695-7229

USA: UNITED STATES

* Phone Number:

919-513-7943

Fax Number:

Email:

ted_baker@ncsu.edu

2. Applicant Experience:

Yes No Not applicable to this program

3. Human Subjects Research

Are any research activities involving human subjects planned at any time during the proposed project Period?

Yes No

Are ALL the research activities proposed designated to be exempt from the regulations?

Yes Provide Exemption(s) #:

No Provide Assurance #, if available:

Please attach an explanation Narrative:

FileName

MimeType

Tracking Number: GRANT00445471

Application for Federal Assistance SF-424 Version 02

* 1. Type of Submission: <input type="radio"/> Preapplication <input checked="" type="radio"/> Application <input type="radio"/> Changed/Corrected Application	* 2. Type of Application: <input checked="" type="radio"/> New <input type="radio"/> Continuation <input type="radio"/> Revision	* If Revision, select appropriate letter(s): <input type="text"/> * Other (Specify): <input type="text"/>
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* 3. Date Received: <input type="text" value="04/02/2008"/>	4. Applicant Identifier: <input type="text"/>
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5a. Federal Entity Identifier: <input type="text"/>	* 5b. Federal Award Identifier: <input type="text"/>
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State Use Only:

6. Date Received by State: <input type="text"/>	7. State Application Identifier: <input type="text"/>
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8. APPLICANT INFORMATION:

*** a. Legal Name:**

* b. Employer/Taxpayer Identification Number (EIN/TIN): <input type="text" value="566000756"/>	* c. Organizational DUNS: <input type="text" value="042092122"/>
--	--

d. Address:

* Street1:	<input type="text" value="Sponsored Programs"/>
Street2:	<input type="text" value="2701 Sullivan Drive, Suite 240"/>
* City:	<input type="text" value="Raleigh"/>
County:	<input type="text" value="Wake"/>
* State:	<input type="text" value="NC: North Carolina"/>
Province:	<input type="text"/>
* Country:	<input type="text" value="USA: UNITED STATES"/>
* Zip / Postal Code:	<input type="text" value="27695-7514"/>

e. Organizational Unit:

Department Name: <input type="text" value="MIE"/>	Division Name: <input type="text" value="TEC"/>
---	---

f. Name and contact information of person to be contacted on matters involving this application:

Prefix: <input type="text" value="Mr."/>	* First Name: <input type="text" value="Matthew"/>
Middle Name:	<input type="text"/>
* Last Name:	<input type="text" value="Ronning"/>
Suffix:	<input type="text"/>

Title:

Organizational Affiliation:

* Telephone Number: <input type="text" value="(919) 515-2444"/>	Fax Number: <input type="text" value="(919) 515-7721"/>
--	--

*** Email:**

Application for Federal Assistance SF-424

Version 02

9. Type of Applicant 1: Select Applicant Type:

H: Public/State Controlled Institution of Higher Education

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

*** Other (specify):**

*** 10. Name of Federal Agency:**

U.S. Department of Education

11. Catalog of Federal Domestic Assistance Number:

84.116

CFDA Title:

Fund for the Improvement of Postsecondary Education

*** 12. Funding Opportunity Number:**

ED-GRANTS-020108-001

*** Title:**

Special Focus Competition: European Union-United States Atlantis Program CFDA 84.116J

13. Competition Identification Number:

84-116J2008-1

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Raleigh, NC Providence, RI

*** 15. Descriptive Title of Applicant's Project:**

International Network of Technology Entrepreneurship Educators

Attach supporting documents as specified in agency instructions.

Application for Federal Assistance SF-424

Version 02

16. Congressional Districts Of:

* a. Applicant

* b. Program/Project

Attach an additional list of Program/Project Congressional Districts if needed.

17. Proposed Project:

* a. Start Date:

* b. End Date:

18. Estimated Funding (\$):

* a. Federal	<input type="text" value="70,000.00"/>
* b. Applicant	<input type="text" value="0.00"/>
* c. State	<input type="text" value="0.00"/>
* d. Local	<input type="text" value="0.00"/>
* e. Other	<input type="text" value="0.00"/>
* f. Program Income	<input type="text" value="0.00"/>
* g. TOTAL	<input type="text" value="70,000.00"/>

* 19. Is Application Subject to Review By State Under Executive Order 12372 Process?

- a. This application was made available to the State under the Executive Order 12372 Process for review on
- b. Program is subject to E.O. 12372 but has not been selected by the State for review.
- c. Program is not covered by E.O. 12372.

* 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes", provide explanation.)

- Yes
- No

21. *By signing this application, I certify (1) to the statements contained in the list of certifications** and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)

** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: * First Name:

Middle Name:

* Last Name:

Suffix:

* Title:

* Telephone Number: Fax Number:

* Email:

* Signature of Authorized Representative: * Date Signed:

ASSURANCES - NON-CONSTRUCTION PROGRAMS

OMB Approval No. 4040-0007
Expiration Date 04/30/2008

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

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Standard Form 424B (Rev. 7-97)
Prescribed by OMB Circular A-102

Tracking Number: GRANT00445471

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327- 333), regarding labor standards for federally-assisted construction subagreements.
10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93- 205).
12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (Identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).
14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

<p>* SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL Brian Thomas</p>	<p>* TITLE Associate Vice Chancellor, Research Adm.</p>
<p>* APPLICANT ORGANIZATION NC State University</p>	<p>* DATE SUBMITTED 04-02-2008</p>

Standard Form 424B (Rev. 7-97) Back

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure.)

Approved by OMB

0348-0046

<p>1. * Type of Federal Action:</p> <p><input type="checkbox"/> a. contract</p> <p><input checked="" type="checkbox"/> b. grant</p> <p><input type="checkbox"/> c. cooperative agreement</p> <p><input type="checkbox"/> d. loan</p> <p><input type="checkbox"/> e. loan guarantee</p> <p><input type="checkbox"/> f. loan insurance</p>	<p>2. * Status of Federal Action:</p> <p><input type="checkbox"/> a. bid/offer/application</p> <p><input checked="" type="checkbox"/> b. initial award</p> <p><input type="checkbox"/> c. post-award</p>	<p>3. * Report Type:</p> <p><input checked="" type="checkbox"/> a. initial filing</p> <p><input type="checkbox"/> b. material change</p> <p>For Material Change Only:</p> <p>year quarter</p> <p>date of last report</p>
<p>4. Name and Address of Reporting Entity:</p> <p><input checked="" type="checkbox"/> Prime <input type="checkbox"/> SubAwardee Tier if known:</p> <p>* Name: N/A</p> <p>* Address: N/A</p> <p>N/A</p> <p>Congressional District, if known:</p>		<p>5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:</p>
<p>6. * Federal Department/Agency:</p> <p>Department of Education</p>	<p>7. * Federal Program Name/Description: Fund for the Improvement of Postsecondary Education</p> <p>CFDA Number, if applicable: 84.116</p>	
<p>8. Federal Action Number, if known:</p>	<p>9. Award Amount, if known:</p>	
<p>10. a. Name and Address of Lobbying Registrant (if individual, complete name):</p> <p>* Name: N/A</p> <p>N/A</p> <p>* Address:</p>	<p>b. Individual Performing Services (including address if different from No. 10a):</p> <p>* Name: N/A</p> <p>N/A</p>	
<p>11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.</p>		<p>* Signature: Brian Thomas</p> <p>* Name: Mr. Brian Thomas</p> <p>Title:</p> <p>Telephone No.:</p> <p>Date: 04-02-2008</p>
<p>Federal Use Only:</p>		<p style="text-align: right;">Authorized for Local Reproduction</p>

NOTICE TO ALL APPLICANTS

The purpose of this enclosure is to inform you about a new provision in the Department of Education's General Education Provisions Act (GEPA) that applies to applicants for new grant awards under Department programs. This provision is Section 427 of GEPA, enacted as part of the Improving America's Schools Act of 1994 (Public Law (P.L.) 103-382).

To Whom Does This Provision Apply?

Section 427 of GEPA affects applicants for new grant awards under this program. **ALL APPLICANTS FOR NEW AWARDS MUST INCLUDE INFORMATION IN THEIR APPLICATIONS TO ADDRESS THIS NEW PROVISION IN ORDER TO RECEIVE FUNDING UNDER THIS PROGRAM.**

(If this program is a State-formula grant program, a State needs to provide this description only for projects or activities that it carries out with funds reserved for State-level uses. In addition, local school districts or other eligible applicants that apply to the State for funding need to provide this description in their applications to the State for funding. The State would be responsible for ensuring that the school district or other local entity has submitted a sufficient section 427 statement as described below.)

What Does This Provision Require

Section 427 requires each applicant for funds (other than an individual person) to include in its application a description of the steps the applicant proposes to take to ensure equitable access to, and participation in, its Federally-assisted program for students, teachers, and other program beneficiaries with special needs. This provision allows applicants discretion in developing the required description. The statute highlights six types of barriers that can impede equitable access or participation: gender, race, national origin, color, disability, or age. Based on local circumstances, you should determine whether these or other barriers may prevent your students, teachers, etc. from such access or participation in, the Federally-funded project or activity. The description in your application of steps to be taken to overcome these barriers need not be lengthy; you may provide a clear and succinct

description of how you plan to address those barriers that are applicable to your circumstances. In addition, the information may be provided in a single narrative, or, if appropriate, may be discussed in connection with related topics in the application.

Section 427 is not intended to duplicate the requirements of civil rights statutes, but rather to ensure that, in designing their projects, applicants for Federal funds address equity concerns that may affect the ability of certain potential beneficiaries to fully participate in the project and to achieve to high standards. Consistent with program requirements and its approved application, an applicant may use the Federal funds awarded to it to eliminate barriers it identifies.

What are Examples of How an Applicant Might Satisfy the Requirement of This Provision?

The following examples may help illustrate how an applicant may comply with Section 427.

- (1) An applicant that proposes to carry out an adult literacy project serving, among others, adults with limited English proficiency, might describe in its application how it intends to distribute a brochure about the proposed project to such potential participants in their native language.
- (2) An applicant that proposes to develop instructional materials for classroom use might describe how it will make the materials available on audio tape or in braille for students who are blind.
- (3) An applicant that proposes to carry out a model science program for secondary students and is concerned that girls may be less likely than boys to enroll in the course, might indicate how it intends to conduct "outreach" efforts to girls, to encourage their enrollment.

We recognize that many applicants may already be implementing effective steps to ensure equity of access and participation in their grant programs, and we appreciate your cooperation in responding to the requirements of this provision.

Estimated Burden Statement for GEPA Requirements

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this information collection is 1890-0007. The time required to complete this information collection is estimated to average 1.5 hours per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to: Director, Grants Policy and Oversight Staff, U.S. Department of Education, 400 Maryland Avenue, SW (Room 3652, GSA Regional Office Building No. 3), Washington, DC 20202-4248.

Statement Addressing Section 427 of the Department of Education's General Education Provisions Act

There are two primary ways in which TECnet will actively seek to promote full and equitable participation in the activities supported by this grant.

First, in terms of ensuring physical accessibility, we will: a. Ensure that the meetings of TECnet are held in buildings that provide access to people with physical disabilities and b. Seek to ensure that all website content is accessible and usable to people with disabilities.

Second, in building TECnet, it is *core to our mission* that we seek out, recruit and welcome a membership that is diverse across all relevant dimensions, and we will actively encourage and build participation from people from a wide variety of national origins and races, from the broadest possible spectrum of ages, from both genders and without regard to disability. We are well aware that the more diverse our participants are across all dimensions, the more we will learn and the more valuable the network will be to every participant.

CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Statement for Loan Guarantees and Loan Insurance

The undersigned states, to the best of his or her knowledge and belief, that:

If any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions. Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

* APPLICANT'S ORGANIZATION

NC State University

* PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE
--

Prefix: Mr. * First Name: Matthew Middle Name:
--

* Last Name: Ronning Suffix: * Title: Associate Vice Chancellor, Research Adm.
--

* SIGNATURE: Brian Thomas * DATE: 04/02/2008
--

CONSORTIUM PARTNERS IDENTIFICATION FORM

* Program:

* Country:

Lead Partner:

* Name:

Prefix:

* First Name:

Middle Name:

* Last Name:

Suffix:

* Name of Institution/Organization: (60 Character Limit)

Department: (60 Character Limit)

* Complete Address:

* Street1:

Street2:

* City:

County:

* State:

State/Province:

* Country:

* Zip / Postal Code:

Phone Number: Fax Number:

Email:

CONSORTIUM PARTNERS IDENTIFICATION FORM

Partner Two:

*** Name:**

Prefix:

* First Name:

Middle Name:

* Last Name:

Suffix:

*** Name of Institution/Organization: (60 Character Limit)**

Department: (60 Character Limit)

*** Complete Address:**

* Street1:

Street2:

* City:

County:

* State:

State/Province:

* Country:

* Zip/Postal Code:

Phone Number: Fax Number:

Email:

CONSORTIUM PARTNERS IDENTIFICATION FORM

* Program:

* Country:

Lead Partner:

* Name:

Prefix:

* First Name:

Middle Name:

* Last Name:

Suffix:

* Name of Institution/Organization: (60 Character Limit)

Department: (60 Character Limit)

* Complete Address:

* Street1:

Street2:

* City:

County:

* State:

State/Province:

* Country:

* Zip / Postal Code:

Phone Number: Fax Number:

Email:

CONSORTIUM PARTNERS IDENTIFICATION FORM

Partner Two:

* Name:

Prefix:

* First Name:

Middle Name:

* Last Name:

Suffix:

* Name of Institution/Organization: (60 Character Limit)

Department: (60 Character Limit)

* Complete Address:

* Street1:

Street2:

* City:

County:

* State:

State/Province:

* Country:

* Zip/Postal Code:

Phone Number: Fax Number:

Email:

CONSORTIUM PARTNERS IDENTIFICATION FORM

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Project Narrative

Summary

Entrepreneurship education (EE) provides students with essential cross-disciplinary skills that improve their ability to pursue their dreams while contributing to the economy through the creation of start-ups and by assisting established firms to grow. Increasingly, policy makers and scholars recognize that 'technology-based high growth' entrepreneurship is particularly important as a route to competitiveness in the global market (e.g. Wong et al, 2005; Shane, 2008).

As educators we therefore need to pay greater attention to the methods of teaching students how to create technology-based high growth ventures (hereafter: 'TEE' for Technology Entrepreneurship Education). Traditional entrepreneurship curricula at the graduate level have relied too heavily on case studies and informal interactions with successful entrepreneurs. The institutions involved in this proposal are committed to improving TEE by replacing traditional approaches with a process-based curriculum derived from careful study of the relevant research literature and over a decade of experimentation and successful practice.

*grad
level.*

This proposal is to form a network of US and European institutions focusing on delivering TEE to a diverse group of graduate students. This proposal is to form a network of US and European institutions focusing on delivering TEE to a diverse group of graduate students. We label this joint effort "TECnet" (short for Technology Entrepreneurship & Commercialization network). The network will be based on prior successful bilateral cooperations between the partner institutions.

Within TECnet we propose to benchmark policies and practices for high growth entrepreneurship education, and provide a network of collaborative resources that will assist both the educators and the student projects within the partner institutions. TECnet will enable collaborative research on the outcomes of process-based TEE, and disseminate the results broadly in order to advance the field and build the network. Over the long term we expect to dramatically impact the creation of high growth start-ups.

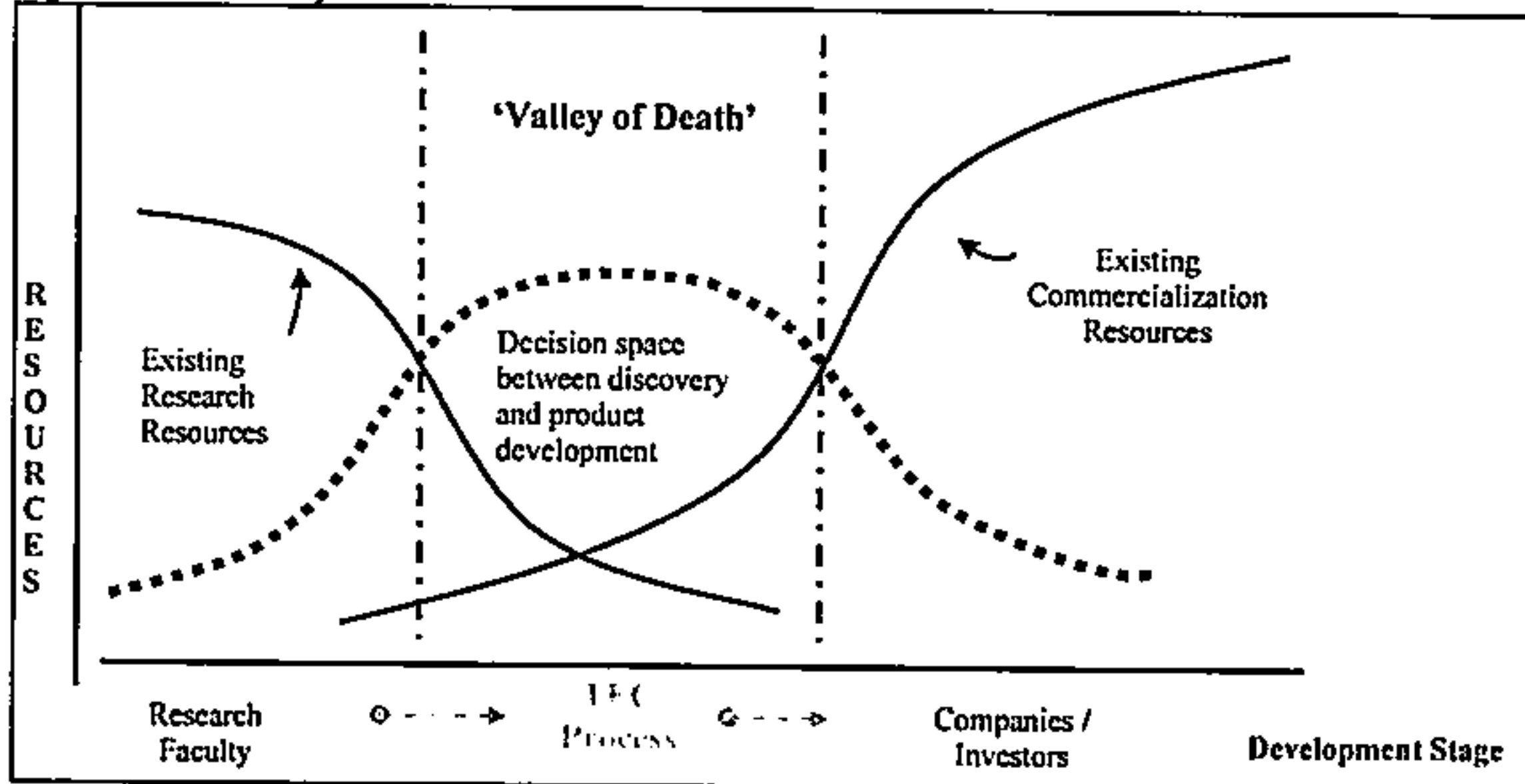
I. Relevance and objectives of the project

In the face of rapidly increasing globalization, entrepreneurship 'has emerged over the last two decades as arguably the most potent economic force the world has ever experienced' (Kuratko 2005). However, there is increasing recognition that the economic impact of entrepreneurship is delivered primarily by new high growth enterprises (Autio 2006; Galloway and Keogh 2006; Shane 2008). And at the same time there is recognition that few entrepreneurship education programmes have demonstrated substantial impact on the generation of these technology-based growth ventures (Kirby, 2006; Storey, 2000).

In this context, a programme developed at NC State University ('NCSU') with National Science Foundation funding has proven to be effective in teaching high growth entrepreneurship, as measured on several dimensions (Kington et al., 1997, 1999). The development began in the 1990s, in response to concerns about a mismatch between the training of scientists and engineers and the needs of the globalizing economy (COSEPUP 1995; Holohan and Markham 1996). The approach involved recognition that a particularly important route to high growth enterprises involved crossing the "Valley of Death," i.e. the gap between the resources and competencies for science and technology research and the available resources and competencies for commercialization (Figure 1, Markham et al. 2002, 2008). Faculty from NCSU developed a structured, systematic, and academically underpinned process for creating new growth enterprises from science and technology sources. This process, termed the "Technology Entrepreneurship and Commercialization (or 'TEC') process, also formed the basis for a curriculum to teach technology-based high growth entrepreneurship to multidisciplinary teams of students (Markham et al., 2000; Kington et al., 2001, 2002; Kington and Vilarinho, 2004). While

there are a number of measures pointing to the success of the methodology, the most succinct is probably the fact that student projects have resulted in about 400 new jobs and \$170 million in venture funding from NCSU alone in the past 12 years. Kingon has recently moved to Brown University, where the methodology is being adapted to a Engineering Masters degree entitled "Program for Innovation Management and Entrepreneurship."

Figure 1: The 'Valley of Death'



In Europe, the UK Government has made strenuous efforts to boost the number of science and engineering-based businesses (DTI 2000a; 2003). Alongside their traditional teaching and research activities, the 'Third Mission' for higher education institutions (HEIs) comprises a series of Government-funded Programmes that support UK universities in working with Industry (DTI 2000b), such as initiatives to increase the quality and quantity of technology-based spin-outs (Kirby 2006; Davidsson 2002). The 'Third Mission' remit has also seen the growth of EE and TEE within UK universities (a theme taken up by the Oslo Agenda for Entrepreneurship Education in Europe: 2006).

Against this backdrop, Loughborough University ('LU') launched a TEE initiative based on the NCSU (TEC) framework. The TEC process, adapted for the UK and particularly to the institutional context, is offered as a double option on the LU part-time MBA Programme. This option has run twice, with about 50 students (half with STEM subject qualifications, half from arts/social sciences) enrolling in total. Early results are sufficiently strong that the module has become a compulsory element of the MBA curriculum. It is expected to contribute strongly to LU's reputation for commercialising its research through licensing and the formation of companies (see <http://www.loughborough-innovation.co.uk/>).

In Portugal, the Government also gives a high priority to policies that capture the economic value of knowledge produced within the national scientific and technological system, through official bodies such as the Innovation Agency, and the Institute for SMEs and Innovation. Another important body, COTEC - a private not-for-profit association - is a member of the proposed TECnet.

COTEC has launched a number of programmes aimed at fostering an entrepreneurial culture among students and researchers in HEIs, along with the creation of high-technology, high-growth ventures. A nationwide TEE programme has had most impact, namely the COHITEC Programme

(a collaboration between COTEC and NCSU). Launched in 2004, COHITEC aims to stimulate the creation of high-growth firms from research conducted within Portuguese universities, while giving science and engineering researchers and MBA students the skills required to start-up such ventures.

The TEC process is employed in the training phase of the COHITEC Programme, carried out annually over a three-month long period in two business schools (Lisbon and Porto). This phase is attended by researchers from science and technology institutions from all over the country and MBA students from the two partner business schools. From 2004 to 2007, approximately 160 researchers and 130 MBA students have participated in this phase and 42 business opportunities have been presented. The Programme has a second phase that aims at generating 'investment ready' business proposals, selected from projects assessed in the training phase. By 2008, about a dozen start-ups had resulted; two start-ups supported by the COTEC second phase have already secured investments totalling more than €20m.

Overall, the process-based teaching focusing on high growth start-ups is proving to be very effective. We now propose to move to the next level by establishing a network to:

- 1) Exchange best practices and policies for teaching and promoting the process-based approach to TEE
- 2) Create a web-based, international repository of information on the methodology, projects and participants
- 3) Provide students with hands-on experience in creating high growth technology ventures through international collaboration
- 4) Conduct research that (initially) compares the outcomes from delivering the varied TEE curricula across TECnet institutions.

- II. Nature and activities of the project and ...
- III. Strategies to achieve the objectives

For clarity, the narrative links each of the four objectives above with the primary strategies and activities planned to support that objective.

Objective 1: Exchange best practices and policies for teaching and promoting the process-based approach to TEE

The principal strategy to achieve this objective is to hold a series of faculty and practitioner workshops, to exchange and build on best practices for teaching and promoting TEE.

Three Workshops (to be held in months 1, 12 and 22 of the two-year funding cycle) will enable TECnet participants to address issues of best practices globally as well as concerns over local contexts. The focus will be on 'Best Practices and Solutions' through the exchange of ideas and observations. The outcome of these workshops will be an enhanced common core teaching approach, but with adaptations to meet the specific requirements of each of the partners. It should be noted that the workshops are not designed to develop a joint curriculum (excluded from this category of Atlantic's funding), rather to ratchet up best practices and policies in delivering the existing TEC approach to TEE. This international co-operation should increase the opportunities for scaling up innovation in each country.

The discussions on pedagogy will focus mainly on the improvement of teaching and training materials, including (*inter alia*):

- Lecture topics and course materials
- Sharing of useful resources
- Methods of incorporating new academic thinking and/or key articles into the Programme

- Adaptation for different environments.

The workshops will also have a practical or commercial element as participants share information on, for example: issues in company formation; problems encountered by student groups and/or technologists across the globe and, critically, solutions to those problems; useful databases; etc.

TECnet participants will also use the workshops to promote the benefits of this process-based TEE, especially its relevance for academic researchers and institutions, and wider economic development.

Objective 2: Create a web-based, international repository of information on the TEC methodology, projects and participants

The principal strategy to achieve this objective is to gather information from the workshops and from a variety of sources to create a repository that will support the projects and teaching of students in all TECnet locations as projects move from planning to implementation and beyond.

The three workshops detailed above will be a key element in creating and then developing this repository, but information will also be collected on an ongoing basis from TECnet participants, secondary sources, academic journals, etc. This web-based, searchable knowledge base (database) should eventually serve as the foundation for sharing best teaching practices, lessons learned from past projects and so on, as well as contact information for alumni, industry leaders and so on. Subject to appropriate data protection safeguards, the repository will comprise:

- vetted and adapted course materials such as lecture materials, teaching tips, and articles/books by academic thought leaders
- information on past projects and their outcomes
- data of use to start-ups - regulatory authorities, company formation logs, term sheets, licenses, Non-Disclosure Agreements, business models, funding sources, etc.
- useful contacts, for example: instructors; alumni; students; investors; technology sources; and, industry experts.
- information gathered for research purposes (see Objective 4 below).

We see the website as critical in facilitating transatlantic communication and collaboration between educators, students, mentors, alumni and so on. The site will be designed and operated using "wiki" and "blog" approaches to allow an interactive exchange of ideas and observations rather than simply offering a static knowledge base. This resource should be a pool from which educators and students alike draw knowledge and inspiration. In generating an active community among TECnet participants (existing and new), this activity lies very much within the Atlantis ethos of e-learning and open education.

Objective 3: Provide students with hands-on experience in creating high growth technology ventures through international collaboration

The principal strategy to achieve this objective is to use international collaboration, the web-based database, and international network to provide opportunities for students to operate internationally in the TEE programmes at the respective TECnet institutions.

Achieving an international perspective is perhaps the most ambitious element of the project, but TECnet participants see great benefits in pursuing the Atlantis aim to 'intensify the interface between transatlantic higher education, vocational training and industry'. The formation of TECnet should, in itself, send a clear signal to students and technologists about the importance of an international perspective. We wish students to operate in international arenas with nearly as much comfort as when they operate in their home countries. Other activities to achieve this international dimension include:

- collaboration between partners to identify technologies that have the most potential for global assessment by student teams, and ...
- creation of (virtual) teams – people from different countries working together as either student teams in a class or as real entrepreneurs in multinational start-ups, supported by ...
- an international support network comprising alumni and/or independent experts to review TECnet-affiliated business plans.

Objective 4: Conduct research that (initially) compares the outcomes from delivering the varied TEC curricula across TECnet Institutions.

The principal strategy to achieve this objective is to link scholarly research and practical applications through 'engaged research' that will assess the impact of this form of TEE on a variety of stakeholders - students, technology-oriented firms, the wider economy and so on.

Data will be gathered systematically from, *inter alia*, students, technologists, and collaborators. This primary data will be supplemented by regular reviews of the academic literature in this field. The initial focus will be to study the outcomes from delivering the varied TEC curricula at existing TECnet institutions (NCSU, Brown, LU and COTEC); this study will then be extended to include any new members of TECnet. Research will also link efficacy of technology entrepreneurship to the national and local policies in place at each location.

TECnet will disseminate the results broadly to improve the teaching of high growth entrepreneurship globally and to build the network.

IV. Role each partner will play in the project's implementation

Each partner will:

- offer resource-intensive TEE programmes based on the TEC process
- engage in data gathering for both pedagogical and research purposes, and share that data with TECnet participants
- attend the workshops to address implementation issues and also best practice and policies in relation to practical support for the technologists and their firms
- promote membership in TECnet by other universities and institutions
- contribute to the worldwide support network for student projects.

In relation to specific tasks:

- COTEC will establish the platform for the web-based repository of information and will take the lead in website development
- NCSU will organize and maintain the content of the website, although information will be gathered by all TECnet participants
- NCSU will lead the research programme, supported by LU and Brown
- LU and Brown will develop strategies and opportunities for dissemination of data and the promotion of TECnet to other universities and institutions.

V. Innovative elements or strategies of the project

The founding members of TECnet interact today as members of a loosely structured collaboration between organizations committed to training, support and research; each institution has separately adapted the TEC processes to local needs. This prior work and these existing

relationships provide a unique platform to learn from each other and hence improve what is already a highly developed and effective approach to TEE, and also to conduct research studies.

The key innovative elements on which we will build are the process-based pedagogy developed over the last decade and the intensive use of experiential learning based on immersion in real projects that have produced real commercial and entrepreneurial outcomes.

In addition, our strategy for this project will create innovations in three primary areas:

- We focus on technologies with the potential for global impact hence our approach to TEE demands that students engage in substantial and sustained international interactions; our goal is for students to operate on the global stage with as much comfort as in their home countries.
- We will build a multinational network of industry experts, start-up service providers, venture/risk capitalists and serial entrepreneurs. These international rather than local resources will be available to support projects in all locations. These resources will also provide the basis for experiments with international collaborative team projects (see Objective 3 above). Contact information will be made available online and personal introductions for students, faculty and researchers will be a regular component of TECnet.
- We will develop a data gathering protocol that allows us to monitor efficiently the outcomes of the common core teaching approach to TEE, with adaptations for local needs across the various TECnet contexts – including both existing and new members. The web-based repository of standard forms and tools central to the TEC approach will be updated regularly to incorporate developments in the relevant literature and/or White Papers and commentaries on the usage and effectiveness of TEE in various contexts. In this manner, we will integrate practical outcomes with scholarly research in a continuously-evolving, process-based pedagogy. Despite constant calls for more “engaged research” in the fields of entrepreneurship and technology commercialization, such an interlinking of theory and practice is highly innovative.

VI. Added value of multilateral, transatlantic cooperation in the project

Two primary factors underlie the added value of developing this collaborative network rather than working independently, namely: the education and continuing support of globally-competent students; and, the unique opportunity for research on educational intervention.

The education and continuing support of globally-competent students

Much of current business school and engineering graduate training in TEE relies heavily on anecdotal evidence and on narratives of exemplary outcomes that students are urged to emulate. One of the primary and highly distinctive benefits of the TEC pedagogy is that students follow a well-structured but flexible approach, grounded in scholarly research and taught through experiential learning on real projects. However, the current single-nation approach to delivering TEC (whether in the U.S., England or Portugal) is deficient in one crucial respect; when dealing with the growing importance of global markets, lecturers utilize the same sorts of traditional tools that this pedagogy more generally avoids i.e., we urge students to behave in a globally-informed and sensitive manner yet rely upon examples and narratives of others’ success to put this point across.

It is therefore imperative that we expand our pedagogy and the projects through which it is implemented to include a process-based approach to identifying and developing opportunities, technologies and resources of all kinds from anywhere on the globe. Students must learn how to access international markets, to attract extra-regional risk capital, and to utilize world-class

Industry and technology expertise no matter where they are doing business. They must also be exposed to diverse business practices, political environments and cultures. Our collaborative network will support this by permitting us to create transnational projects and teams, and also by allowing us to study and compare lessons from across various regions – both those now part of the network and those we recruit to join it (described in section VIII) – and to integrate these lessons into our pedagogy.

The unique opportunity for research on educational intervention

Emerging streams of scholarly research have contributed to our attempts to "globalize" our students' educational experiences. However, to our knowledge, very little work ~~addresses~~ effectively addresses what processes can be structured and taught to provide students with the ability to engage in entrepreneurship and technology commercialization across traditional national boundaries. An important element of TECnet will therefore be to engage in high quality, cross-national comparative research that focuses on what teachable processes deliver the best outcomes in relation to entrepreneurship and technology commercialization across a wide variety of environments.

VII. Expected results and outcomes of the project

As described in our objectives above, the primary results and outcomes of the project will be: the creation of a network (TECnet) of educators utilizing and promoting a structured, process-based, replicable form of TEE; the creation and development of a web-based repository of information and contacts, as a means to capture and disseminate lessons learned across all TECnet locations; the emergence of a cadre of "global citizens" prepared to build high growth technology-based ventures demanding international co-operation and engagement; and, the systematic gathering of data to conduct research on best practices for process-based TEE, and the dissemination of those results.

VIII. Potential impact of the project for a wider group of institutions

TEC was developed and first implemented at NCSU; it has been made available to, and adopted by, a variety of organizations, including the founding members of TECnet and other organizations in the U.S., Europe and Asia. The TEC process, as locally adapted, has proved at least equally effective beyond NCSU, both within the U.S. and in Europe.

In this project we propose to establish that TECnet is viable and sustainable, and then open the network to many more members. The common platform and repository we will create as part of this project will make TEC more accessible and scalable across a much larger group of nations and organizations.

Our goal is to promulgate and develop the process-based teaching approach both within the countries of the current members and well beyond these nations. This project will help provide the tools to make this happen.

IX. Plans for evaluation, promotion and dissemination of the project results

Evaluation

In line with our objectives, our evaluation of this project will focus on: student impact; and, the effectiveness of TECnet as a network (especially as more members adopt the TEC pedagogy).

We will measure two primary elements of *student impact*. First, we will track the number of students who receive cross-national training/team experiences enabled by TECnet; our initial goal will be for this number to increase by at least 20% annually. Second, we will track five primary elements of student outcomes: i. student satisfaction with the training/experience they have received; ii. changes in skill levels in relation to fundamental tasks of technology commercialization and entrepreneurship; iii. changes in students' goals and cognitive orientations toward valuing the creation of innovation through application of emerging science and technology; iv. the number and percentage of students engaging in the creation of new technology-based venture; and v. the number and percentage of students engaged in jobs involving technology commercialization in existing firms. Our goal is to have a statistically and substantively significant annual improvement in each of five areas; each of these student outcomes will be investigated in our research programme.

For TECnet as a network, we will measure success first by its size and second by its effectiveness in relation to student learning and project support.

First, a primary goal of TECnet will be to disseminate the TEC pedagogy and add further members to the network. This is essential for both increasing the impact of the project and for our long-term sustainability. Our goal will be to add a minimum of three new members during the course of this project, effectively almost doubling the founding size of the network.

Second, we will measure the effectiveness of TECnet as a mechanism for learning from each member's experiences of using the TEC approach. The web platform we develop will allow us to provide version control and periodic releases of changes to the core forms, readings, and other documents that support the pedagogy. These releases will be based directly on feedback and records of successes and problems documented by TECnet members. Our goal, therefore, is that we will capture and incorporate at least two changes *from each member of TECnet* for each major version release. Finally, an essential characteristic of TECnet will be the network of affiliated individuals and firms who have supported student projects and who are willing and eager to engage with additional projects. We will closely track, map, and manage the network of active supporters who become affiliated with TECnet, with a goal of at least 50 additional supporters distributed across TECnet locations by the end of the project.

Promotion and Dissemination

Promotion and dissemination of the results of this project will occur in three primary ways: promotion of student successes; presentation and publication of related research; and, active support for new members of TECnet.

First, as our students start new firms or commercialize new technologies for existing firms, we will use a variety of inexpensive means of celebrating these student successes, including (but not limited to) press coverage, use of "Web 2.0" mechanisms, and encouraging the firms themselves to make note of the role played by TECnet in their success. Second, the processes and intended outcomes of TECnet activities are primary research targets of several of the founding members of TECnet. We will actively pursue opportunities to present our research at international entrepreneurship, commercialization, management, and engineering conferences, and will also seek to publish related research in both academic and practitioner outlets. Third and finally, we will support new members of TECnet by assembling international teams to "train the trainers" and more generally support quick and effective implementation of the TEC pedagogy at each new member's location.

Sustainability

Our sustainability model is simple and direct. The current project will provide an adaptable platform that will permit cost-effective expansion of TECnet. Thereafter, each new member of TECnet will be expected to fund the costs of implementation of the pedagogy at their locations.

In addition, each TECnet member will pay annual fees for membership and will commit to funding at least one representative's travel to the annual TECnet workshop to be hosted at a member Institution.

BIBLIOGRAPHIC REFERENCES

- Autio, E. (2006) High-growth entrepreneurship and Internationalization: Implications for policy, Presentation at G-Forum, Berlin.
- COSEPUP: Committee on Science, Engineering, and Public Policy of the National Academy of Sciences (1995) Reshaping the graduate education of scientists and engineers, National Academy of Sciences, Washington DC.
- Davidsson, P. (2002) What Entrepreneurship Research can do for Business and Policy Practice, *International Journal of Entrepreneurship Education*, Vol. 1, pp. 5-24.
- Department for Trade and Industry (DTI) (2000a) White Paper: Excellence and Opportunity - A science and Innovation policy for the 21st Century, HMSO.
- Department for Trade and Industry (DTI) (2000b) Third Mission statement, <http://cms1.gre.ac.uk/dfee/#speech>, <http://www.ost.gov.uk/enterprise/knowledge/sec.htm>
- Department for Trade and Industry (2003) Innovation report. Competing in the Global Economy - The Innovation Challenge, HMSO.
- Galloway, L. and Keogh, W. (2006) Integrating enterprise education with science and engineering degrees: A case study, NCGE Working Paper 029/2006.
- Holohan, P. and Markham, S. K. (1996) Factors affecting multifunctional team effectiveness, in Milton D. Rosenau, Jr (Ed.), *The PDMA Handbook*, New York: John Wiley and Sons.
- Kingon, A. I. and Markham, S. K. and Zapata, M. (1997, 1999) Technology, education, and commercialization: Development of new concepts in Integrated education, Reports to National Science Foundation: project EEC-9528410.
- Kingon, A. I., Thomas, R., Markham, S. K., Aiman-Smith, L. and Debo. R. (2001), An Integrated Approach to Teaching High Technology Entrepreneurship at the Graduate Level, Proceedings of the 2001 American Society for Engineering Education Annual Conference & Exposition.
- Kingon, A. I., Markham, S. Thomas, R. and Debo R. (2002), Teaching high tech entrepreneurship: Does it differ from teaching entrepreneurship? (And does it matter?), Proceedings of the 2002 American Society for Engineering Education Annual Conference & Exposition.
- Kingon A. I. and Vilarinho P. (2004). Issues in the design of entrepreneurship education programs. Proceedings of the Workshop on Leading International Practices in Engineering Entrepreneurship Education, Lisbon, Portugal, September 2004. Proceedings published by COTEC, Portugal.
- Kirby, D. A. (2006) Creating entrepreneurial universities in the UK: Applying entrepreneurship theory to practice. *Journal of Technology Transfer*, Vol. 31, pp. 599-603.
- Kuratko, D. F. (2005), The Emergence of Entrepreneurship Education: Development, Trends and Challenges, *Entrepreneurship Theory and Practice*, Vol. 29, No. 5, pp. 577-597.
- Markham, S. K., Baumer, D. L., Aiman-Smith, L., Kingon, A. I. and Zapata, III, M. (2000) An Algorithm for High Technology Engineering and Management Education, *J. Engineering Education*, 209-218, April issue.
- Markham, S. K., Kingon, A. I., Lewis, R. J. and Zapata, M. (2002) The university's role in creating radically new products, *International Journal of Technology Transfer and Commercialisation*, Vol. 1, pp. 163-172.

'Oslo Agenda' (2006) http://ec.europa.eu/enterprise/entrepreneurship/support_measures/training_education/doc/oslo_report_final_2006.pdf

Shane, Scott A. (2008). *The illusions of entrepreneurship: the costly myths that entrepreneurs, investors and policy makers live by*. Yale University Press, New Haven, CT.)

Storey, D. J. (2000). Six steps to heaven: evaluating the impact of public policies to support small business in developed economies. In Sexton, D. & Landstrom, H. (Eds), *The Blackwell Handbook of Entrepreneurship*, Oxford, UK: Blackwell, pp. 176-93.

Wong, P. K., Ho, Y. P. and Autlo, E. (2005) *Entrepreneurship, Innovation and Economic Growth: Evidence from GEM data*, *Small Business Economics*, Vol. 24, pp. 335-350.

PERSONNEL

NC State University

Dr. Ted Baker is a member of the Management, Innovation & Entrepreneurship Department at North Carolina State University, where he teaches courses in entrepreneurship and technology commercialization to graduate students in Management, Science and Engineering programs. His research focuses on entrepreneurship in resource-constrained environments, and on patterns of entrepreneurial bricolage, defined as the behaviors through which entrepreneurs *make do* by applying combinations of the resources at hand to solve problems and exploit opportunities. He is particularly interested in how bricolage generates or constrains venture growth. His work has defined resource constraints broadly, ranging from the financial limitations of particular groups of entrepreneurs to the institutional and regulatory limitations of specific locales. He has also written about the lingering effects of systematic discrimination on women and members of ethnic groups, and about the behavior of venture capitalists. His research has appeared in top management and social science journals. Ted has taught, consulted, researched or participated in the governance of entrepreneurial ventures in North, South and Central America, Western and Eastern Europe, Australia, S. Korea, India and Pakistan. Prior to his academic career, Ted worked in private industry for 15 years, including leadership roles in several high growth technology-based start-ups; he also ran a small seed-stage investment fund for the University of Wisconsin. He earned a PhD in sociology from the University of North Carolina-Chapel Hill and an MBA from the University of Chicago.

Mr. Roger Debo is Director of the TEC Program at NC State University. Roger has been involved in the Technology Entrepreneurship and Commercialization (TEC) program since 1997 and its Director since 2000. His responsibilities include technology recruitment, small business advising, business plan development and program liaison with the local entrepreneurial community. Roger has an MBA and a Masters in Economics. He has a decade of experience in new venture creation having served as interim CEO/Board member for 4 startups and Board member for 2 more. His specialty is new venture formation and development. Roger was a member of the Southern Growth Policy Board's Vision 2030 Committee; was the treasurer for the Carolina's Chapter of PDMA and is a founding member of the Triangle Universities Roundtable. Since 2004, Roger has been actively involved in supporting the COHiTEC initiative in Portugal, which has to-date, spawned 2 new high growth companies in that country and is the 2006 Price Foundation Innovative Entrepreneurship Educators Award winner.

Brown University

Dr. Angus Kingon is Professor of Engineering, and Barrett Hazeltine University Professor of Entrepreneurship and Organizational Studies at Brown University as of 2008. Previously he was at the North Carolina State University as Professor in the Department of Management, Innovation and Entrepreneurship, Executive Director of

Technology Commercialization Programs in the College of Management, and Professor of Materials Science and Engineering in the College of Engineering.

Professor Kingon leads a major project funded by the National Science Foundation, to assist corporations to develop new business methods for creating value from science and technology. This project, entitled "National Partnership for Managing Upstream Innovation: The Case of Nanoscience and Technology," is being undertaken in conjunction with a group of major industrial companies in the USA. He and his team of colleagues also undertake projects with individual companies in the area of innovation and value creation. This includes the establishment of new corporate structures and processes for the development of corporate ventures.

Professor Kingon leads a new multi-university project funded by Goldman-Sachs, entitled "Developing Technology Entrepreneurship Capacity in Africa."

As Executive Director of the High Technology Entrepreneurship and Commercialization Program, Professor Kingon ran a concentration of the MBA program, teaching entrepreneurship and technology commercialization to postgraduate students from the College of Management, as well as science and engineering postgraduate students from throughout the university. The unique methodology of the program was developed under the auspices of a major project from the National Science Foundation. Within North Carolina, the student educational program has additionally been responsible for the creation of multiple technology-based new ventures, with hundreds of new jobs being created as a result. The program has been expanded to be an 'engine' for new enterprise creation in the region.

The importance of the education and outreach methods have been well-recognized, with Kingon and his faculty colleagues now supporting the establishment of related programs in other major universities in the USA, as well as in the UK, Portugal, Slovenia, Korea, Ireland, and South Africa. In Portugal, the educational methods are an integral part of a comprehensive strategy for innovation renewal and economic development supported by a national organization, COTEC.

At the same time, Professor Kingon maintains an active research program in materials, electronic materials and nanoscience and nanotechnology. He has published about 300 papers in refereed journals, edited 7 books, published 6 book chapters, and has 15 issued patents, with over 3500 citations to his research publications. He has currently about \$4 million of funded research. Some of his research has been commercialized. In particular, his work on embedded electronic components was commercialized in conjunction with Motorola. This has allowed miniaturization and cost reduction in cellular phones and mobile devices.

Professor Kingon has been the recipient of a number of awards, and has presented over 150 invited and plenary talks over the past 10 years. He won the Price Foundation Award as Innovative Entrepreneurship Educator for 2006.

Loughborough University

Dr. Regina Frank is Lecturer in Innovation and Entrepreneurship at the Business School, Loughborough University, where she enjoys fostering entrepreneurial mindsets of undergraduate and postgraduate students. Prior to joining Loughborough, Regina worked at ESCP-EAP European School of Management in Oxford and London.

Regina has an international educational and professional background, having lived and worked in Portugal, Brazil, Germany, Switzerland, France and the UK. Her multicultural work experience encompasses both the academic and the commercial worlds, in a variety of contexts. While working in corporate finance for Investcorp, UBS and Dresdner Kleinwort Benson, her projects included valuations of cross-border acquisition targets to the management of a multi-billion dollar privatisation. Regina consulted on business start-ups and participated in the UK launch of a subsidiary of Citigroup, focusing on new models of financial education.

In academia, too, Regina particularly enjoys interdisciplinary work. In the past, her dual exposure to corporate finance and strategic management led to her PhD on "Synergy Valuation in Bank Mergers" which she has continued to investigate post-degree.

Her current research at the Business School focuses on high growth venture creation and cross-disciplinary entrepreneurship education. She is keen to expand her collaboration with North Carolina State University (NCSU), centred on an innovative educational method for technology evaluation and commercialism, to become a multilateral international network of technology entrepreneurship educators.

Mr. Grahame Boocock is Senior Lecturer at Loughborough University. He holds a first class honours degree in Economics from Sheffield University, and a Master Degree from Manchester University, as well as various professional qualifications.

After nearly a decade in commercial banking in the UK, he moved into lecturing. Presently, he offers modules in the field of finance covering risk assessment and financial packages for management buy-outs, financing high technology, mergers and acquisitions, etc. Since 1994, he has played a lead role in offering final year entrepreneurship modules, the fastest growing and most highly rated modules in the Business School. He also offers entrepreneurship modules on MSc, MBA and post experience programmes.

Grahame has, over recent years, developed new modules on Innovation Management for the Loughborough MBA programme; this was a major initiative in conjunction with North Carolina State University. This innovative module involves working with outside companies to tackle real problems associated with technology evaluation and commercialisation.

Grahame has also worked with the Enterprise Office (essentially the University's Business Support Unit) to advise spin-out companies and has held the position of non-executive director with an innovative company.

He has wide administrative experience in building international networks, being responsible for the creation of a Business School degree programme in Singapore, in conjunction with the Productivity and Standards Board in Singapore. Grahame was British Aerospace Associate Professor at University Utara (Northern) Malaysia from 1993-94.

His current research centres on the financing of SMEs (especially the provision of risk capital), venture capital in Asia, learning and innovation within SMEs, and the provision of entrepreneurship education.

COTEC (Portugal)

Dr. Pedro Vilarinho is Project Manager at COTEC - a not-for-profit business association whose mission is “to promote the competitiveness of companies established in Portugal, through the development and diffusion of a culture and practice of innovation” and whose members are more than 100 of Portugal’s largest companies. At COTEC he is in charge of different initiatives, namely those that aim at fostering an entrepreneurial culture among Portuguese undergraduate and graduate students. In 2006 he received the Price Foundation Innovative Entrepreneurship Educators Award for his effort in setting up the COHiTEC Program. COHiTEC is a national program that aims at stimulating the creation of high-tech / high-growth ventures from the knowledge created by researchers from Portuguese universities and at inducing in science and engineering researchers and MBA students the skills required to start-up high-tech / high growth ventures. This Program has already resulted in the creation of two start-up companies that have secured an investment totaling more than €20m. Dr. Vilarinho was the provisional CEO of one of these start-ups. Also under the umbrella of the COHiTEC Program he set-up the first fully private seed venture capital fund in Portugal (a €7m fund).

Until 2003, he was at the University of Aveiro (Portugal) as an assistant professor in the Department of Economics, Management and Industrial Engineering. He has an undergraduate degree in Electronics and Telecommunications Engineering from the University of Aveiro, an MSc in Computer Science in Industrial Engineering from the University of Coimbra and a PhD in Industrial Engineering from the University of Porto. His main research area is operations management, publishing regularly in international scholarly journals. He edited the book “Leading International Practices in Engineering Entrepreneurship Education” published by COTEC.

Dr. Vilarinho was a Research Scholar at the North Carolina State University School of Management, Head of the Department of Management and Industrial Engineering (University of Aveiro) and the first Director of the Centre for Asian Studies (University of Aveiro).

Project Timetable: "International Network of Technology Entrepreneurship Educators"						
Component of project	Outputs to be achieved/produced by the end of the implementation of this component	Activities leading to this output	Activity to be started by this date and completed by this date	Partners / Persons Involved (See Section IV of Proposal Narrative)	Time Input (person / days)	
1. Exchange best practices and policies for teaching and promoting the process-based approach to TEE	<ul style="list-style-type: none"> Exchange best practices data Review progress of cross-national projects 	Best practices workshops held in Months 1, 12, 22	Data collection Data analysis	All All	For further details, see Proposal Narrative and Appendix (Detailed Costings for TECnet funding application)	
2. Create a web-based, international repository of information on the methodology, projects and participants	<ul style="list-style-type: none"> web-based, international repository of information on the methodology, projects and participants 	<ul style="list-style-type: none"> Format and structure designed at first workshop Database structure, wiki/blog and interface Database populated Modularization of standard materials, one module every 2 weeks, 32 modules Updates and maintenance 	December 2008 Completed by February 2009 March -July 2009 Completed January 2010 Ongoing	All COTEC All/COTEC COTEC COTEC		
3. Provide students with hands-on experience in creating high growth technology ventures through international collaboration	Minimum of 6 cross-national projects	<ul style="list-style-type: none"> Initiate 1 or 2 cross-national projects Initiate a minimum of 1 cross-national project in each cycle of the TEC program in each country (i.e. minimum of 6 total projects) 	Month 1 of funding cycle Ongoing	All		
4. Conduct research that (initially) compares the outcomes from delivering the varied TEE curricula across TECnet institutions.	<ul style="list-style-type: none"> Project evaluation plan Dissemination plan and projects 	<ul style="list-style-type: none"> Create and review whitepapers evaluating progress and comparative results: prior to and during each best practices workshop Prepare Initial manuscripts a. describing and analyzing cross-national differences in process and results and b. Evaluating the specific cross-national projects Submit manuscripts to relevant conferences Complete initial data gathering, including performance metrics for entire project Submit manuscripts to relevant journals 	Month 14 Starting Month 15 Months 21-22 Starting Month 23	LU, NCSU All All All All		



March 31, 2008

Office of the Vice Chancellor
Campus Box 7003
103 Holladay Hall
Raleigh, NC 27695-7003

919.515.2117
919.515.7521 (fax)

Frank Frankfort, Ph.D.
EU-U.S. Atlantis Program Coordinator
U.S. Department of Education
Fund for the Improvement of Postsecondary Education (FIPSE)
1990 K Street, NW, 6th Floor
Washington, D.C. 20006-8544

Dear Dr. Frankfort:

I am very pleased to provide this letter of commitment on behalf of NC State University expressing our support for the application submitted by Dr. Ted Baker and Mr. Roger Debo for funding under the auspices of the EU-US Atlantis Program (Policy-Oriented Measures).

Funding for this project will enable the creation of a network of US and European institutions focusing on delivering technology entrepreneurship education to a diverse group of graduate students. The network will solidify and expand connections between the US and European partners currently delivering the Technology, Entrepreneurship, and Commercialization (TEC) program that was initially developed at NC State. In the US alone this program is credited with creating more than 350 jobs in new businesses and attracting more than (b)(4) of venture capital on the basis of student projects.

The proposed TEC network or "TECnet" will enable benchmarking of policies and practices and will provide a network of collaborative resources that will assist both the educators and the student projects within the partner institutions.

NC State is very pleased to join in collaboration with Brown University in the US and Loughborough University and COTEC representing the Portuguese Universities in Europe. This collaboration will, I am sure, yield many benefits for both researchers and students alike. The need to 'go global' is essential for high growth, technology-oriented firms and for the wider economy. I know that our students will value the opportunity to work with overseas students, and take advantage of the global network offered by TECnet.

Sincerely,

John G. Gilligan
Vice Chancellor for Research and Graduate Studies



BROWN

March 31, 2008

To: Dr John Gilligan,
Vice-Chancellor for Research,
North Carolina State University
Raleigh, NC 27695

Dear Dr Gilligan,

Letter of Intent: Collaboration in the Atlantis Program

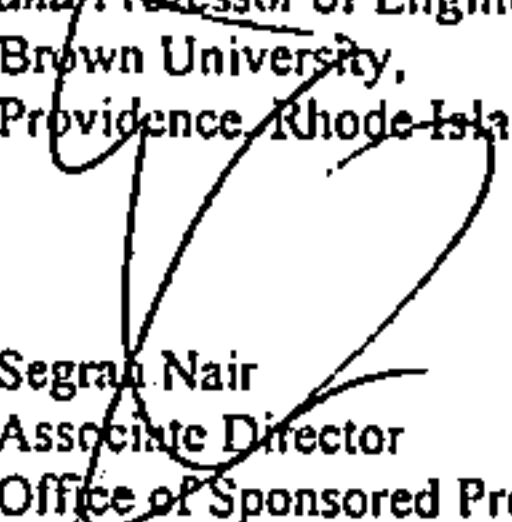
This letter is to indicate our intent to collaborate with NC State University and European institutions in the 2008 Atlantis Program, under the Policy-Oriented Measures category.

The collaboration is intended to further the important field of technology-based entrepreneurship education. The group of four institutions will participate in workshops in which best practices in technology entrepreneurship education are analyzed, and improved educational methods developed. A network ("TECnet") will be established that fosters teams of students undertaking international projects, and undertakes research programs to measure educational impact. Besides contributing to these project objectives, Brown students will specifically undertake research to address the manner in which national and local policies frame and constrain entrepreneurship programs.

We expect the program to impact not only the education of students at our respective institutions, but also the creation of high growth enterprises that will benefit the economy.

Yours sincerely,

Angus I Kingon
University Professor of Entrepreneurship and Organizational Studies,
and Professor of Engineering,
Brown University,
Providence, Rhode Island



Segrain Nair
Associate Director
Office of Sponsored Projects
Brown University
Providence, Rhode Island

Gregory Crawford
Dean of Engineering
Division of Engineering
Brown University
Providence, Rhode Island

Professor Neil A Halliwell, DSc FREng CEng FIMechE CPhys FInstP FSPiE
Provost and Deputy Vice-Chancellor
Loughborough University Leicestershire LE11 3TU UK
Direct Line: +44 (0)1509 222003 Fax: +44 (0)1509 223900
E-mail: N.A.Halliwell@lboro.ac.uk

31 March 2008



Education, Audiovisual and Culture Executive Agency (EACEA)
Unit P4
Avenue du Bourget 1 (BOUR 00/37)
B-1140 Brussels
Belgium

Dear Sir/Madam,

I am very pleased to endorse the application by Dr Regina Frank and Mr Grahame Boocock for funding under the auspices of the EU-US Atlantis Programme (Policy-Oriented Measures).

Loughborough University is committed to providing a high quality international education experience to prepare our graduates for the global workplace. Our vision for Loughborough is that we will be recognised internationally for distinctive teaching, research and enterprise programmes of the highest quality. We plan to embed an international dimension in all our curricula. As part of this process, we will develop overseas partnerships with leading universities, government bodies and industry. Moreover, our latest Strategic Plan specifically refers to international co-operation in the field of emerging technologies, and innovation and technology transfer across the full range of academic disciplines.

The EU-US Atlantis Programme funding will help us to achieve a number of the objectives set out above. Specifically, it will enable the creation of a network of European and US institutions focusing on delivering technology entrepreneurship education to a diverse group of graduate students. The proposed TECnet collaboration with NCSU and Brown University in the US and with COTEC representing the Portuguese Universities in Europe will yield many benefits for both researchers and students alike. The need to 'go global' from the outset is essential for high growth, technology-oriented firms and for the wider economy. Our students will value the opportunity to work with overseas students and academics, and take advantage of the international network offered by TECnet.

In relation to the individuals involved, Dr Regina Frank offers wide experience with multi-national cross-disciplinary teams, having lived and worked in Portuguese and English speaking countries and elsewhere, and is thus suited to drive this international network forward. Grahame Boocock has overseen major growth in entrepreneurship education in the Business School over the past decade. He was also responsible for adapting the NCSU approach to technology entrepreneurship education for Loughborough.

Loughborough University will contribute to the TECnet project by funding up to 30% of the time spent on the project by Dr Regina Frank and Grahame Boocock (equivalent 11 days each) as well as 100% of the overhead costs (equivalent €35,702).

I am confident TECnet will contribute towards the sustainable improvement of Technology Entrepreneurship Education and hope the application will be successful.

Yours sincerely,

A handwritten signature in black ink that reads 'Neil Halliwell'.

Neil Halliwell
Provost and Deputy Vice-Chancellor



Dr Regina Frank
Assistant Director
2008-03-31

cotec
Portugal

Associação Empresarial para a Inovação



Education, Audiovisual & Culture Executive Agency
Unit P4
Avenue du Bourget 1 (BOUR 00/37)
BE-1140 Brussels
Belgium

Porto, 2th April 2008

Dear Sir / Madam,

I am very pleased to endorse the application for funding of Dr. Pedro Vilarinho under the auspices of the EU-US Atlantis Programme (Policy-Oriented Measures).

COTEC is a not-for-profit business association set-up in 2003 under the patronage of the Portuguese President, Dr. Jorge Sampaio. COTEC associates are more than 100 of Portugal's largest companies and the President of COTEC's General Assembly is the current Portuguese President, Prof. Anibal Cavaco Silva.

COTEC's mission is "to promote the competitiveness of companies established in Portugal, through the development and diffusion of a culture and practice of innovation as well as of resident knowledge".

One of the strategic goals defined by COTEC to pursue its mission is "to promote the diffusion and the application of methods and processes aimed at creating and valuing knowledge".

One of the initiatives set-up by COTEC to enforce this goal is the COHiTEC Program that aims at stimulating the creation of high-tech / high-growth ventures from the knowledge created by researchers from Portuguese universities and at inducing in science and engineering researchers and MBA students the skills required to start-up high-tech / high growth ventures.

The Program started in 2004 with the support of the Portuguese-American Foundation for the Development (FLAD) and the HiTEC Centre of North Carolina State University and, since then, has been running every year in Porto and Lisbon.

The Program has a nationwide scope in the sense that researchers from universities and other R&D institutions from all around the country participate in it.

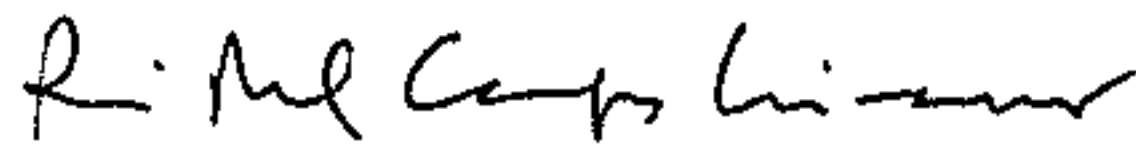
The EU-US Atlantis Programme funding will help us to participate in the development of a network of European and US institutions aimed at providing to researchers and graduate students the skills required to start-up high-tech / high-growth ventures.

In relation to Dr. Pedro Vilarinho, he is the Project Manager of the COHITEC Programme since its beginning, so it is unquestionable that he is the right person at COTEC to drive forward this network.

COTEC will contribute to the TECnet Project by funding up to 30% of the time spent on the project by Dr. Pedro Vilarinho (equivalent to 11 days) corresponding to the amount of 3.402,00 €.

I am very positive about the contribution of the network towards the advancement of Technology Entrepreneurship Training in a multicultural environment and hope the application is successful.

Your's sincerely,



Rui Manuel Campos Guimarães

General Director

Budget Narrative

1. Personnel: personnel costs are included for a graduate research assistant to work $\frac{1}{4}$ time (10 hours per week) during one semester during year 1 of the project and $\frac{1}{4}$ time for 2 semesters during year 2 of the project. Year 1 costs are estimated at \$3,375 and year 2 costs are estimated at \$6,750.

2. Fringe: fringe benefits are included for the research assistant at 14% of salary. Year 1 costs are \$473 and year 2 costs are \$945

3. Travel:

Year 1

Trip to Belgium for ATLANTIS annual conference in October of 2008. Budget assumes 3 people traveling for 4 days and 3 nights at a cost of \$2,815/person for a total trip cost of \$8,445.

Trip to US location for ATLANTIS annual conference in fall of 2009. Budget assumes 2 people traveling 4 days and 3 nights \$1,900/person for a total trip cost of \$3,800.

Total year 1 travel \$12,245

Year 2

Trip to Loughborough, UK in summer 2010. Budget assumes 1 person traveling for 4 days and 3 nights at a cost of \$2,900 total.

Trip to EU location for ATLANTIS annual conference in fall of 2010. Budget assumes 1 person traveling for 5 days and 4 nights at a total cost of \$3,183.

Total year 2 travel \$6,083.

4. Equipment: no equipment will be purchased on this project.

5. Supplies: no supplies are budgeted directly to this project.

6. Contractual: Included in the contractual costs are \$11,000 per year for consortium partner Brown University and \$3,000 per year for the project evaluator.

7. Other: \$2,500 is requested in this category in year 1 to cover $\frac{1}{4}$ of the graduate research assistant's tuition for 1 semester. \$5,000 is requested in this category in year 2 to cover $\frac{1}{4}$ of the graduate research assistant's tuition for 2 semesters.

8. Indirect Costs: Indirect costs are calculated as 8% of total direct costs.