REQUEST FOR PROPOSALS

PRODUCTION OF SIMULATIONS IN NUCLEAR ENGINEERING TECHNOLOGY AND ADVANCED MANUFACTURING: OPEN EDUCATIONAL RESOURCES FOR WORKFORCE READINESS

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1.   Introduction

Project Background

Excelsior College and its partner, Polk State College, are collaborating to provide associate degree students an opportunity to learn and prove mastery of hands-on workplace skills in an online environment. In Excelsior's Nuclear Engineering Technology program, mastery of the skills will earn students the *Energy Industry Fundamentals* certificate provided by the Center for Energy Workforce Development, recognized in the industry as confirmation of necessary skills. Five courses, one being the capstone, will draw upon the simulations. At Polk State, students in the Engineering Technology program will prepare in advance for laboratory experiences, shortening time on campus and increasing learning, use simulations to refresh learning, and gain skills required to earn the *MSSC CPT* and *PMMI Mechatronics* certifications.

The project is funded by a three-year grant from the National Science Foundation's Advanced Technological Education program (each year's funding is contingent on successful completion of the prior project year). Simulation development, piloting, and revision will take place throughout all three years of the project. To maximize the taxpayer's investment, the products should be developed using technology easily adopted by educators beyond our two institutions.

About the Institutions

Excelsior College, located in Albany, New York, provides educational opportunity to adult learners with an emphasis on those historically underrepresented in higher education. The College meets students where they are — academically and geographically, offering quality instruction and the assessment of learning.

Excelsior College was founded in 1971 by the New York State Board of Regents, and was originally known as the Regents External Degree Program (REX). Today, Excelsior is a private, nonprofit distance education institution serving adult learners. Minimal residency requirements and acceptance of all relevant transfer credits from accredited sources permit today's mobile student population including Service Members, to apply relevant prior coursework. Students may combine transferred credit from prior college, military, or workplace training and education; examinations; and Excelsior online coursework to complete their degrees.

Polk State College, formerly Polk Community College, was established in 1964 to serve Polk County, Florida. It is a multi-campus institution serving over 20,000 students with Bachelor of applied Science, Bachelor of Science, Associate in Arts and Associate in Applied Science degrees, as well as a wide range of certificate and workforce training options. The innovative Engineering Technology program is a competency-based, modular, non-term, self-paced, learner-centered, faculty -mentored Open Entry/Early Exit (OEEE) model. This hybrid-CBE program supports the manufacturing and applied engineering sector in mid-Florida.

Environment

Learning Management Systems

The multimedia developed by this project must function within online courses offered in an LMS. Excelsior College uses Canvas, and Storyline as a supporting software to assess learning outcomes. Simulations must be programmed to deliver assessment results to an LMS gradebook using industry

standards such as SCORM, Tin Can API, etc. Final output needs to be HTML or HTML5, simulations cannot be Flash-based, and use of cascading style sheets is discouraged.

Open Educational Resource

When the simulations are fully functional, they will be offered as open educational resources for adoption by schools and training programs nationwide. Versatility to integrate with multiple major LMS platforms will be a strength.

The ability for individuals to access simulations for practice, independent of an affiliation with a school, is desired.

Americans with Disabilities Act

Every simulation must satisfy the legal requirements of the Americans with Disabilities Act for educational access.

Responsive Design

Excelsior College strives to provide usability for all course content regardless of how a student chooses to access their course, therefore simulations need to be fully functional on mobile devices as well as computer systems. Although the College's policy is to have content available on mobile phones, the nature of this simulation content requires a larger screen – tablets are the smallest devices that simulations are required to function on. Excelsior College requires students to have a minimum internet connection of 56K modem, but recommend broadband via cable or DSL. Additional technology requirements can be viewed here: http://help.excelsior.edu/system-requirements-and-required-software/

Project Stakeholders

Students in two-year technology programs will use simulations to learn skills and prove competency. In programs teaching using a blended learning model, students will be able to familiarize themselves with skills prior to lab practice, making their lab experience both safer and more efficient. Simulations may replace some lab practice. Following labs, simulations can again be accessed to refresh skills.

In Excelsior's fully online program, simulations will make it possible for students to prove competency in hands-on skills. Using simulation will permit them to complete the entire requirements for the *Energy Industry Fundamentals* certificate – for the first time, online students may enter the workforce with both a workforce certificate and two-year degree, making them more competitive in the job market.

Faculty will have engaging content to incorporate into new or existing courses. In the case of existing courses, more extensive revisions may be required to maintain the workload. An Instructor Manual is an additional deliverable, intended to guide faculty unaccustomed to teaching using simulation on their incorporation into the curriculum. This should guide other institutions through the adoption of simulations, whether into a Learning Management System (LMS) or as stand-alone exercises.

Employers and Industry Association representatives are invested in accurate, up-to-date content to assure that technicians entering the workforce. Both groups will provide input to the development of the simulations. It is critical that revision of the simulations is possible (at a reasonable additional cost) in the event that industry equipment, practices, or regulations change.

Purpose of this RFP

We seek to engage a multimedia production vendor with talents that can create simulations and fulfill our general requirements, as outlined in this request.

Vendor Opportunity

This workforce readiness project is a unique opportunity for qualified vendors to propose methods, development tools and techniques that meet or exceed all the requirements listed in this RFP. Excelsior College seeks vendors who will take joint ownership and responsibility for development and implementation of the simulation content.

General Information

Excelsior College has every intention of following through with this proposal. However, nothing in this RFP should be construed as an offer to contract, but is instead an invitation to make an offer. Once an offer is accepted by Excelsior College, this RFP and all work and time schedules developed will be incorporated into the final contract. As with most planned projects, some chance exists that we will not actually accept any response.

Excelsior College reserves the sole right and discretion to make any decision related to any offer you make, including rejecting any of the offers and/or implementing just some of the components described therein, or choosing other vendors/integrators which we identify now or in the future. This document represents our needs and intentions at the time of this RFP, as based on our current estimates.

Nothing contained herein should be construed to mean that our intentions and needs may not change over time, or that additional needs or intentions may not be identified at the time we contract with vendors/integrators chosen as a result of our efforts described herein.

Project Overview and Objectives

This project will develop simulations that realistically teach and assess technical workforce skills in power generation and advanced manufacturing environments. Safety Awareness, Working with Basic Hand and Power Tools and Technology, and Manufacturing Machines and Components are the relevant specialties. A chart detailing the skills is being provided with this RFP. Wherever practical, one simulation may serve to teach both power generation and manufacturing applications.

Subject matter experts (SMEs), utilizing the *Skills to be Simulated* tables, will identify necessary learning outcomes and develop scenarios to be simulated. Once the scenarios are completed and approved by the Advisory Committee, they will be provided to the simulation vendor. Representatives of industry will also provide input to the content. The earliest stage of the project will be an opportunity for the SMEs and the technology vendor to collaborate on the creative and practical aspects of content delivery. **We invite feedback from the vendor** to inform our thinking on the presentation of the content and delivery methods.

2. Scope of Work

Phases of Work and Timeline

The project period is 10/9/2017 – 6/30/2020. Technology expense is shared across three years. Each simulation developed will:

- Have content developed by a SME
- Have content reviewed by industry representatives
- Be tested by the Advisory Committee
- Be integrated into a content delivery system
- Be piloted by students, and
- Be revised as indicated by pilot data

Activities	Start Date	Finish Date
Safety *scenarios delivered to vendor for production*	n/a	10/20/2017
Blueprint *scenarios delivered to vendor for production*	n/a	12/11/17
Tool Usage *scenarios delivered to vendor for production*	n/a	4/2/2018
Safety simulation developed by vendor	11/3/2017	1/5/2018
Safety simulation placed in Excelsior course **Vendor will work with Excelsior's technology and LMS staff on integration as necessary**	4/30/2018	6/29/2018
Safety simulation placed in Polk State online modules **Vendor will work with Polk's technology and LMS staff on integration as necessary**		
***Safety* course piloted at Excelsior**	Fall 1 2018	10/19/2018
Safety modules piloted at Polk		
Safety course revisions, as indicated by pilot data, sent to vendor and made		
Instructor Manual created in time for Faculty development webinar for teaching with simulations		
Evaluate the SIM process & revise if needed before repeating		
Tool Use and Blueprint simulation developed by vendor	4/2/2018	6/1/2018
Tool Use and Blueprint simulation s in Excelsior course **Vendor will work with Excelsior's technology and LMS staff on integration as necessary**	9/4/2018	11/2/2018
Tool Use and Blueprint simulations placed in Polk State online modules **Vendor will work with Polk's technology and LMS staff on integration as necessary**		
***Tool Use and Blueprint* course piloted at Excelsior**	Spring 1 2019	2/22/2019

Tool Use and Blueprint modules piloted at Polk		
Tool Use and Blueprint course revisions, as indicated by pilot data, sent to vendor and made		
***Tool Use and Blueprint* modules piloted at Polk**		
Tool Use and Blueprint course revised as data indicates		
Simulations incorporated in Excelsior capstone **Vendor will work with Excelsior's technology and LMS staff on integration as necessary**	9/4/2018	11/30/2018

Vendor Responsibilities

This RFP is specific about services requested for Excelsior College and the material in the RFP should be familiar to the respondents. However, if you believe the RFP is mistaken or requests anything impractical or infeasible, document your proposal's variance from the RFP and indicate the reason for variance.

Selected vendor will serve as the primary contractor and will be responsible for that firm's products, services, and costs in their proposal.

Excelsior College's Responsibilities

Excelsior College will provide:

- Project Management contact.
- Written scenario content. Detailed outline of the envisioned activity and supporting rationale.
- Learning and assessment objectives for each simulation.
- Access to SMEs for consultation.
- Feedback on simulation function related to workforce education and training needs.
- Assistance with obtaining specialized images of power generation and advanced manufacturing environments, when not generally available.
- Academic content for a Manual, for the purpose of guiding instructors in a variety of institutions as they make simulations available to their students.

Vendor Tasks and General Requirements

The following is a list of the deliverables that our team envisions being produced by the vendor, and vendors are encouraged to offer suggestions through the specifics described in the response to this request, and any ensuing conversations – we value your expertise in current technology.

- Interactive simulations designed to
  - Teach workplace skills
    - Permit students unlimited practice attempts
    - Provide immediate teaching feedback to students following each learning attempt
  - Assess student ability following practice.
    - Assessments should be timed, and faculty should have the ability to adjust the time period.

- o Deliver assessment results to an LMS gradebook, using industry standards such as SCORM, Tin Can API, etc.
  - o Function independent of an LMS if desired.
- A Data Dashboard is sought, to help instructors assess progress at a glance, note skills that require additional instruction, note time spent on each activity, etc. for the class as a whole as well as individual students.
- Technical content for a Manual, for the purpose of guiding instructors in a variety of institutions as they make simulations available to their students.
  - o The manual should guide other institutions through the adoption of simulations, whether into a Learning Management System (LMS) or as stand-alone exercises. This should include step-by-step instructions on navigation within the final product, how to view student progress, and how to use any assessment controls (e.g. adjusting length of timed assessments, turning on or off the timing of assessments, setting the number of times a student may take an assessment)
- Final output needs to be HTML or HTML5, simulations cannot be flash-based and use of cascading style sheets is discouraged.
- All products browser tested for compatibility on Internet Explorer 11, safari 5.1+, Google Chrome 60+ and Mozilla Firefox 51+, as well as have a responsive design to display properly on most devices and screen sizes. If there is a minimum screen size you propose for maximum functionality, please explain in your proposal.
- The source code for all components must be provided.
- All products must satisfy the legal requirements of the Americans with Disabilities Act (ADA) for educational access and be incompliance with Web Content Accessibility Guidelines (WCAG) 2.0 Level AA standards to meet accessibility requirements (https.//www.w3.org/TR/WCAG20/).
- The vendor is required to publish the work on a server specified by the Faculty Program Director for Technology. These products will be open educational resources, available for use broadly at no cost, singly or as a package.

3. Instructions to Respondents

Tentative RFP Schedule

Date	Activity
August 16, 2017	Release of RFP
August 16 – September 8, 2017	Vendor Review Period / Question & Answer
September 15, 2017	Last day to submit RFP Responses
September 22 - 29, 2017	Select vendors will be asked to provide a demonstration via a virtual meeting.
September 29 - October 6, 2017	Vendor selected, contract drawn, and all respondents notified.

Note that a chart of the skills requiring simulation accompanies this RFP.

Submission Deadline

One (1) electronic copy of your proposal must be transmitted to Excelsior College to the attention of Bethany de Barros, bdebarros@excelsior.edu, at by 5:00 p.m. EST, Friday, September 8, 2017, to be

considered. Any proposals received after the above date and time will not be considered. No exceptions to this condition will be made.

Proposal Contents and Format

A. Basic Proposal Requirements

To be considered, vendors must meet the following basic requirements:

1. Proposal may be submitted via e-mail, fax, or mail before the proposal due date.
2. A duly authorized officer of the submitting company shall sign the original copy of the submitted proposal.
3. Vendors submitting proposals must be authorized to do business in the State of New York and all of its counties, and must possess all required professional registrations and licenses in accordance with all applicable New York statutes, ordinances, regulations and rules.
4. Vendors must also be able to demonstrate financial strength and capacity appropriate to the scale of this proposed project.
5. Costs for the preparation of your response to this Request for Proposal are solely those of the vendors' responding and Excelsior College assumes no responsibility for any such costs incurred.
6. Respondents to this Request for Proposal must be available virtually for a presentation to Excelsior College staff.
7. Excelsior College reserves the right to reject any proposal that does not comply with the specific requirements for the submission as described herein.
8. Any questions regarding this Request for Proposal should be directed to the contact information below.
9. Excelsior College reserves the right to reject any and all proposals and not award a contract to any submitters.

B. Instructions for Preparing Proposals

The proposal should be prepared and submitted in the following order and format:

1. Transmittal Letter - A letter of transmittal signed by an owner, officer, or authorized agent of the company, acknowledging, and accepting the terms and conditions of this Request for Proposal.
2. Contact Information
    a. Name and complete postal address, including street, city, county, state, and ZIP code
    b. Name and title of person authorized to sign offer
    c. Primary and secondary contacts for the project, including names, titles, phone numbers and email addresses.
    d. Address to which payment should be mailed, if that address is different from that of the bidder.
3. Vendor's Experience with simulation development - Identify and briefly list your company's experience with projects completed.
4. Expertise of Vendor's Personnel:
    a. The size and location of company.
    b. The length of time in business and ownership history of company.
    c. Identify key personnel proposed as members of your project team and include their resumes; list their duties, responsibilities, and field of expertise as it applies to this project and any applicable licenses, registrations or certifications.
5. Vendor References - Provide three (3) references of peer institutions to include client name, contact name, title, address and telephone number, and description of project that is similar in nature to that being proposed in this Request for Proposal.

6. Vendor's Insurance - List the carrier, the type and amount of liability, property, vehicle and worker's compensation insurance carried by your company and by your subcontractors and consultants.
7. Vendor's Litigation Status - Provide a description of all litigation against your company or against your subcontractors and consultants for the last five years. Describe the circumstances and outcome of each case.
8. Vendor's Planned Development Schedule - Provide a specific schedule of how plan development will be completed by customers assigned due date.
9. Vendor's Cost Proposal - Submit contractor's cost proposal. The cost proposal shall contain the proposed lump-sum price written out and repeating the amount in figures. The cost proposal must be signed and dated by the contractor. The cost proposal shall state that the services offered therein shall be valid for a period of sixty (60) days. Cost considerations include, but may not be limited to the following:
   a. Any potential lease or maintenance costs by contract year for the term of the contract
   b. Installation costs
   c. Standard support costs
   d. Infrastructure requirements and estimated costs
   e. On-site technical support costs, including travel and recommended hours to be included
   f. Conversion assistance hourly rates
   g. Training costs and times required for each user role (content specialists, course developers, faculty, application administrators)
   h. Financial incentives applied
   i. Separate cost models for hosted and on premise solutions
10. Frequency and nature of product updates over the project period.
    a. Scheduled
    b. Unscheduled
    c. Optional
    d. Recommended
11. The vendor must indicate if features and options are live-native, live-partner or in development.
12. The vendor should provide their depth and length of experience in the higher education market space.
13. Vendor should include the future roadmap and vision for their product.
14. The vendor should provide four short narratives describing "a day in the life" unique experience of their platform for the following users: (a) student, (b) faculty, and (c) administrator.

Criteria for Evaluating Proposals

Excelsior College shall be the judge as to the merits of the proposal(s) received and any resulting agreement. The evaluation criteria used by Excelsior College will include, but shall not be limited to, the following items:

- Vendor's Overall Experience in higher education
- Expertise of Vendor's Personnel
- Vendor's References
- Ability to meet the functional and technical requirements defined in this RFP.
- Demonstrated understanding of Excelsior College's overall request and respondent's ability to offer a successful solution
- Availability of the vendor's project team to begin work immediately following contract signing and full commitment to Excelsior's project.

- ◆ Quality and completeness of the proposal.
- ◆ Price and adequacy of the cost proposal. Lowest price will not be the award criteria.
- ◆ Small businesses, minority-owned firms, and women-owned businesses are encouraged to apply.

Questions Regarding this RFP

About the bidding process and any technical questions:
>   Bethany de Barros, Director of Grant Management
>   bdebarros@excelsior.edu, 518-608-8358

Academic content only (power generation, manufacturing):
>   Michael Johnson, Associate Dean of Technology
>   Mjohnson2@excelsior.edu, (518) 608-8379

Confidentiality

This document should be deemed confidential and used for the sole purpose of responding to Excelsior College's Request for Proposal.

Proposal Ownership

The contents of all proposals we receive will become the property of Excelsior College. We retain the right to use any ideas presented in any proposal as we see fit without incurring any obligation or any liability for costs incurred by the vendor and/or integrator (except as regards to the use of proprietary hardware or software products).

Award of Contract

Excelsior College reserves the right and privilege to accept or reject, in whole or in part, any, or all proposals, and to award a contract to other than the lowest-cost proposal. We also reserve the right to negotiate and engage more than one qualified supplier at the same time, should such action be in Excelsior College's best interest.

Contract Language Requirements

Any contract created as a result of this solicitation will include the following provisions:

A provision requiring compliance with E.O. 11246—Equal Employment Opportunity, as amended by E.O. 11375—Amending Executive Order 11246 Relating to Equal Employment Opportunity, and as supplemented by regulations at 41C.F.R. Part 60—Office of Federal Contract Compliance Programs, Equal Employment Opportunity Department of Labor;

A provision requiring compliance with the Clean Air Act (42 U.S.C. 7401 et seq.) and the Federal Water Pollution Control Act (33 U.S.C.1251 et seq.), as amended;

The recipient will be required to file certification under the *Byrd Anti-Lobbying Amendment (31 U.S.C. 1352).*

The recipient will be required to provide the certification under Debarment and Suspension (E.O. 12549 and E.O. 12689) regarding its exclusion status and that of its principal employees, from the General Services Administration's List of Parties Excluded from Federal Procurement or Nonprocurement Programs in accordance with E.O. 12549 and E.O. 12689 - Debarment and Suspension.

SKILLS TO BE SIMULATED

Energy Certificate Skill Gaps	Simulation Activity Energy Utility Certification (Excelsior)	Simulation Activity Manufacturing Workforce (Polk)
Safety Awareness: **Complying with the procedures necessary to ensure a safe and healthy work environment**		
Safe Practice • Follows established safety procedures • Is cognizant of the environment and potential hazards • Uses personal protection equipment including safety glasses, work boots, hard hats • Demonstrates knowledge of lock out/tag out practices. • Complies with safety procedures and proper ways to perform work • Follows safety procedures and uses safety equipment as specified by user manuals and safety training • Uses appropriate equipment to ensure work site safety and to keep the public safe • Uses tools and equipment in compliance with user manuals and training	• Participate in a pre-job brief. • Read blue prints for lock out/tag out and troubleshooting of electrical equipment. • Utilize lock out/tag out practices. Apply and verify lock out/tag outs. • Select and don the correct PPE for the job task and electrical environment, teach consequences of improper selection of PPE. • Provide several different types of tools with student required to select the best tool for completing the job activity. • Proper selection of tools and equipment for completing electrical work.	• Safety principles to follow, create safe culture and environment, Prevention, Mitigation. • Specific safety guidelines to be demonstrated: ANSI/ISA, OSHA, IEC, API, NFPA. • Procedures of hazard and risk assessment. • Hazardous fumes, liquids, and solids. • Identify, demonstrate safe testing practices involving transistors, diodes, rectification, and filtering circuits. • Safety Instrumented System design considerations: Design Life Cycle, Separation of Control and Safety, Independent Safety Layers. • Differentiate process control vs. safety control. • Specify, select Safety Instrumented Systems. • Ergonomics and their economic impact, demonstrate a case study.
Unsafe Practice • Understands potential threats created by deviation from safety procedures and improper use of tools and equipment • Calls attention to potential and actual hazardous conditions as they arise • Alerts co-workers and supervisory personnel to hazardous conditions and	• Hazards in power generation and transmission to be identified, corrections suggested by the student. Resulting consequences communicated to participant (i.e. arc flash). • Consequences of deviation from standard safety procedures demonstrated, with associated consequences. Poor	• Hazards of industrial machines and equipment when correct procedure is not followed • Safe vs. dangerous, failure mode vs. technology, failure rates and test intervals. Device failure rates and safe vs. dangerous performance.

Energy Certificate Skill Gaps	Simulation Activity Energy Utility Certification (Excelsior)	Simulation Activity Manufacturing Workforce (Polk)
deviations from safety procedures in a timely manner • Notifies person in charge and/or co-workers of unsafe work conditions • Stops the job if there are unsafe working conditions	workmanship would be one example.	
• Evaluates changes in the environment with respect to impact on safety of self and others	• No simulation - discussed in course modules.	• Mechanical hazards – identify types, causes.
• Promotes effective local, state or national security operations for the protection of people, data, property and institutions	• No simulation - discussed in course modules.	• Emergency procedures including terrorist attack.
• Keeps personal safety equipment in good working order	• No simulation - discussed in course modules.	
• Maintains appropriate certification and is knowledgeable in first aid or first response procedures	• No simulation - discussed in course modules.	

Skill Gaps	Simulation Activity Energy Utility Certification (Excelsior)	Simulation Activity Manufacturing Workforce (Polk)
***Working with Basic Hand and Power Tools and Technology*: Having capability to operate and troubleshoot electric and electronic equipment, mechanical and electrical products**		
• Selects and applies appropriate tools or technological solutions to frequently encountered problems • Carefully considers which tools or technological solutions are appropriate for a given job and consistently chooses the best tool or technological solution for the problem at hand	• The simulation will provide several different types of tools and the student will be required to select the best tool for completing the job activity.	• Select proper power tool use in manufacturing environment. • Consequences of improper power tool use in manufacturing environment.
• Demonstrates an interest in learning about new and	• No simulation - discussed in course modules.	

Skill Gaps	Simulation Activity Energy Utility Certification (Excelsior)	Simulation Activity Manufacturing Workforce (Polk)
emerging tools and technologies; seeks opportunities to improve knowledge of tools and technologies to streamline work and improve productivity		
• Knows how to maintain and troubleshoot tools and technologies	• Troubleshoot an electrical panel or component, select the correct repair options.	Troubleshoot an electrical panel or component, select the correct repair options.
• Uses basic computer technology to receive work orders, report progress and maintain records.	• Apply appropriate troubleshooting strategies when repairing electrical equipment. Select the work order and update it as the job progresses. Record data during trouble shooting and repairs.	Apply appropriate troubleshooting strategies when repairing electrical equipment. Select the work order and update it as the job progresses. This would include recording any data during trouble shooting and repairs.
• Is knowledgeable of machines and tools, including their designs, uses, repair and maintenance	• Simulation will provide education on troubleshooting and repair techniques, including using proper tools and techniques. Design concepts will be discussed in the module.	Simulate troubleshooting and repair techniques, including using proper tools and techniques.

Skill Gaps	Simulation/Multimedia Learning Activity Manufacturing Workforce (Polk)
• Manufacturing machines and components	• Demonstrate, explain dimensions and tolerances, gauging, surface texture, and surface integrity effected by various types of energy, parts finish quality and related issues. • Demonstrate, explain different types of manufacturing operations, flow line, and related facility planning. • Demonstrate, define terminologies related to manufacturing automation components and process. • Explain, demonstrate functions and characteristics computer numerical controls, CNCs and computer integrated manufacturing, CIM. • Explain, demonstrate characteristics, applications of various manufacturing automation models. • Demonstrate operation of common machine tools. • Demonstrate factors related to selecting manual vs computerized machines • Demonstrate a typical machine set-up procedure. • Identify different types of fixtures and factors related to applications. • Identify different types of cutting tools and demonstrate the applications of each.