UNIVERSITY OF LOUISIANA AT LAFAYETTE

STEP Committee

Technology Fee Application

ERP/SCM Sim Lab

Title

HsiuYueh Sonya Hsu

Name of Submitter

(Faculty or Staff Only)

School of Computing and Informatics

Organization

Title: Associate Professor   Date: 07/15/2022

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Department/College/Org: School of Computing and Informatics/College of
                            Sciences

ABSTRACT (250 words or less):

Following the previously funded SAP ERP initiative, this proposal seeks to update current technologies and enhance students' learning of the most cutting-edge software for complex business process modules. The ERP/SCM Sim Lab will prepare UL graduates for the IT/IS sectors, particularly graduates from both Colleges of Sciences and Business Administration. Moreover, access to the data lakes of Walmart, Dillard's, and Tyson for supply chain management and machine/deep learning prediction.

This proposal requests $96,000 for this ERP/SCM Sim Lab. In these two years, efforts will be focused on:1) engaging professors in "train the trainer" sessions with teaching ERP/SCM materials; 2) developing curriculums to customize students' needs for marketability in their disciplines and inter-disciplines, for example, ERP, SCM, Accounting Information System, data analytics/sciences, and statistics; 3) expanding the ERP knowledge base to the student population to College of Business, Nursing, and Continue Education; 4) applying machine/deep learning techniques with real-world data to other disciplines, such as Accounting, Management, Operations, Nursing, and IT/IS professional in the regions.

This Lab is proposed in response to the high demands in IT/IS fields in Lafayette, the Acadiana Region, and the United States. Its impact can extend to 750 to 1500 students across different disciplines each year. The benefits to students of this ERP/SCM Sim Lab are: 1) increased marketability in the growing IT/IS sectors in the regional, national, and international markets; 2) enhanced hands-on experience with real-world business processes; 3) disseminated ERP, SCM and data analytics knowledge to promote STEM education.

1. Purpose of grant and impact to the student body as a whole

a. Purpose of grant

This proposal is written with the overall student body and regional community in mind. The 2014 STEP proposal "SAP ERP Initiative" is focused on enhancing student learning in a dynamic and technological environment. This proposal intends to extend the thrust of this previous proposal, at the same time, to the simulated environment of Supply Chain Management (SCM) modules. SAP provides a basis for ERP and high-performance analytical tools and network configurations. Most of all, the access to a 20-year commercial data lake of Walmart, Dillard's, and Tyson transactional data. Adding the big data analytic power and applying machine learning techniques to students are the primary purposes of this proposal.
Data science has become increasingly crucial for organizations in different industries. The SCM simulation provides the logistic processes, product movement, inventory control, and machine/deep learning techniques. The established mathematical modeling can be simulated to basic coding, process-oriented, and prediction modeling. The practical machine/deep learning may apply to better forecast or prediction business models due to its ability to analyze terabytes of data with sophisticated learning techniques. With an extension of the SCM knowledge base, the ERP/SCM Sim Lab will expand students' learning, increasing the potential employment rate for the student body of the School of Computing and Informatics, Mathematics Department, College of Business. Indeed, any discipline that involves business processes and operations with computer technologies and information systems will benefit from this ERP/SCM Sim Lab.

b. **impact on the student body as a whole**

The ERP Initiative increased UL students' employment opportunities by providing an up-to-date technological environment. The ERP/SCM Sim Lab's main purpose is to augment the fast-paced changes surrounding the UL Lafayette campus and the Research Park. Most importantly, this ERP/SCM Sim Lab could provide a clearinghouse of SCM knowledge base and ERP implementation. This Lab will incubate incoming 4500 new tech jobs offered by fortune-50 companies in the next five years in the State of Louisiana.
This ERP/SCM Sim Lab will be housed in room 202 of Oliver Hall. The purpose of this Lab is threefold: 1) to enhance student learning in an industry-like environment; 2) to bridge the gap between industry and academic learning; and 3) to maintain a valuable and meaningful resource for different disciplines. The following departments are the potential users of the ERP/SCM Sim Lab:

i. *Ray. P. Authement College of Sciences*:
    a) School of Computing and Informatics – the students will be prepared to develop software, business applications, and big data analysis and equipped with working knowledge of SCM and business processes. The simulated SCM module will enhance the learning of complex processes. The big data analysis or scientific data modeling can be delivered to more undergraduate students in addition to the graduate students.

    b) Mathematics Department – the students may apply their statistic working knowledge and learning techniques, such as data extraction, transformation, load, and analysis, to the data lake of Walmart, Dillard's, Tyson, and further practice different statistical modeling with real-world data.

ii. ***B. I. Moody III College of Business Administration*** – Accounting, Management, Marketing, and Hospitality Management will greatly utilize the ERP/SCM Sim Lab through applications and processes common to real-world practices. Direct impact to few courses, such as "Operations Management" (BSAT 382, BSAT 518), "Quantitative Analysis" (QMET 251, 252, BSAT 510), "Accounting Information System" (ACCT 201, 202, 303, 333), and "Management Information System" (MGMT 303).

iii. ***College of Nursing*** – Health Information Management students will increase their operational and administrative experience by the simulated information systems and Electronic Health Records for the healthcare industry. Moreover, big data analytics would facilitate a new analytical tool to analyze and visualize "Big" healthcare data. The data analytics can be extended to Medicare/Medicaid data and clinical information to increase personalized patient care.

vi. ***Continuing Education*** – The SAP S4/HANA Academy will increase graduates' capabilities and opportunities to maintain their professionalism, and it will benefit the local IT/IS professionals' continued training and education.

The ERP/SCM Sim Lab will be an important initiative for a large UL Lafayette student body segment. UL Lafayette and the Acadian region have experienced dramatic growth in IT/IS jobs. This Lab will facilitate significant leadership initiatives in preparing UL graduates for current and anticipated opportunities.

2. Projected lifetime of enhancement

The creation of the ERP/SCM Sim Lab will support a high-end certification program (SAP S4/HANA certification, which costs $6,700). With the SAP University Alliance, the certification program will prepare UL Lafayette graduates for a highly dynamic job market. With this certification program, students' costs in obtaining a certificate (around $1,400) would be reduced so that it is at a level that is more feasible and affordable. Moreover, this Lab should help UL graduates secure higher-quality career opportunities. Students from various disciplines should benefit significantly from the certification program.

More importantly, IT/IS professionals in the community and region will likely increase their interaction with the University (i.e., participate in the certification program, interact with several academic units, and provide internships and job opportunities for our graduates, i.e., CGI, IBM, Louisiana State Government, Louisiana Department of Health, Lafayette General/Ochsner, Schumacher Groups, etc.) The projected lifetime of enhancement is estimated to be two years.

3. Person(s) responsible

a. Implementation

Dr. Hsu and faculty/staff in the School of Computing and Informatics will submit the necessary purchase requisitions for the equipment with software pre-installed. Configuration of the high-speed Internet connection shall be coordinated with Stephen Hall. Implementation will be carried out with the help of the CMIX technical operations director, Dr. Robert Minvielle, and their undergraduate and graduate students.

This proposal also requests support for two graduate assistants (three months of two years) who would assist with the set-up, configurations, upkeep, troubleshooting, SCM simulated environment and stream in real-time, and all the training sessions.

b. Installation

Two graduate students of CACS/Informatics will assist the School of Computing and Informatics in installing and configuring all needed applications. The equipment will be installed with SAP GUI with a basic/advanced ERP system and other software, such as SAP Analytics, SAP Advance Programming, and SAP Mobile Applications. The installations may extend to other colleges on a need basis and on individual students' personal computers. The CMIX technical operations director, Dr. Robert Minvielle, and his assistant, Mr. Troy Leger, may coordinate additional installation to other departments.

c. Maintenance

Routine Maintenance will be coordinated by the School of Computing and Informatics, Drs, Hsu, and Minvielle.

d. Operation

Operations will be managed by Dr. Sonya Hsu and two graduate assistants.

e. Training (with qualifications)

Any necessary training will be coordinated by Dr. Hsu. She currently holds the SAP TERP 10 and SAP ERPsim Facilitator certifications, and she is proficient in S4/HANA, ERP Configurations, data warehousing, and data analytics. Most likely, Dr. Hsu will handle most of the "Train the Trainer" sessions to expand the initiatives in a sufficient and effective manner. Two graduate students with ERP experience will assist in the lab management, training sessions, and troubleshooting of the ERP learning/exercises. The GAs may be hired from the School of Computing and Informatics student pool.

4. Grant proposal and justification

This proposal requests funding to purchase 25 laptops to update the laptops of the funded STEP proposal in 2014. This update will equip the ERP/SCM Lab with dedicated technology and provide the necessary equipment to support ERP/SCM-related classes. These laptops would be used by undergraduate and graduate students, primarily for class learning and projects from the School of Computing and Informatics, Mathematics of College of Science, Business, College of Nursing, and Continue Education.

To supplement the ERP initiative, the SCM perspective, and data analytics with data lake and machine/deep learning techniques, the Lambda Vector is to ETL the data lake from Walmart, Dillard's, and Tyson, apply the machine/deep learning modeling, and to host the real-time streaming of the data analytic/predicting simulations on the Smart Display Monitor. Dell Latitude and Lambda Vector pricing can be found in Appendix A.

SAP ERP software is charged $8,000 for hosting; the agreement is attached in Appendix B. This proposal also requests two graduate students to manage the ERP/SCM and maintain the machine/deep learning application and module display. The total cost of the two students, three months in two years, is $24,000.

5. Budget

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Budget Proposal

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1. **Equipment**   **$ 56,000**

   Description Qty Price TOTAL
   a. New Latitude 3520 25 at $1,100 $27,500
   (See Appendix A, $919.00 + tax + shipping)
   b. Lambda Vector $19,000
   c. Realtime Display Monitor 1 at $9,000 $9,500

2. **Software**   **$ 16, 000**

   All the software needed is offered by SAP free with a hosting service contract at an $8,000 (See Appendix B) fee PER YEAR. This proposal requests the two-year cost ($8,000*2=$16,000) of software hosting.

3. **Supplies**   **$**
4. **Maintenance**   **$**

5. **Personnel**   **$ 24,000**

   (Two graduate student for 2 years (3 months); $2,000 * 3 (months) * 2 (year) * 2 (GA) = $ 24,000)
6. **Other**   **$**

TOTAL: **$ 96,000**

6. Previous Funded STEP Projects
2014: STEP Grant: SAP ERP Initiative $78,000 (OLIVER202, Sonya Hsu)

This funded project has enhanced so many students' learning in real-world knowledge. Numerous student projects were incubated from this ERP Initiative. Many Informatics and Computer Sciences classes were taught in this room. Many recruitment events were held in this ERP Initiative, including demonstrations of Raspberry Pi coding, cross-scripting security, and enterprise processes to the "Science Day." However, the equipment in the Oliver 202 is outdated, and they are not at capacity to update to the Windows 10 or 11 operating systems.

Appendix A

Dell Latitude 3520 15 Inch Lap   +

dell.com/en-us/work/shop/dell-laptops-and-notebooks/latitude-3520-laptop/spd/latitude-15-3520-laptop#configurations_section

UCCSS   HICSS · CMS   Payment activity ,...   Faculty Services...   Banner   Research.gov - Us...   Background Chec...   GENI @ UNC-Cha...   9780132122474 |...   Other Bookmarks

Latitude 3520 Laptop

Customization   Tech Specs   Product Details   Reviews   Drivers, Manuals & Support

$919.00   **Add to Cart**

Arrives by Thursday, Jul 21

Latitude 3520 Laptop

Model: 15" 3520

Limited Time: 35% Off

Estimated Value $1,408.40
$919.00   You Save $489.40
Free Shipping

Dell Business Credit
As low as $28/mo.^ | Apply for credit

View Special Offers | ☆ Get up to $27 back in rewards

Advanced customizations (like battery, mobile broadband, and more) can be made here.

Processor Help Me Choose

| 11th Gen Intel® Core™ i5-1135G7 (8 MB cache, 4 cores, 8 threads, 2.40 GHz to 4.20 GHz Turbo) | 11th Gen Intel® Core™ i7-1165G7 (12 MB cache, 4 cores, 8 threads, 2.80 GHz to 4.70 GHz Turbo) |

Operating System More Info
Dell Technologies recommends Windows 11 Pro for business

Windows 10 Pro (Windows 11 Pro license included), English, French, Spanish

Memory More Info

8 GB, 1 x 8 GB, DDR4, 3200 MHz

Hard Drive More Info

256 GB, M.2, PCIe NVMe, SSD, Class 35

Base Options

Integrated Intel® Iris® Xe Graphics Capable for i7-1165G7 processor

LCD Help Me Choose

| 15.6" HD (1366 x 768) AG Non-Touch, 220nits, Camera & Microphone, WLAN Capable | 15.6" FHD (1920 x 1080) AG Non-Touch, 250nits, Camera w/shutter & Microphone, WLAN Capable |

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Power Supply

65W AC Adapter, 4.5mm Barrel

Tech Specs

Processor
11th Gen Intel® Core™ i7-1165G7 (12 MB cache, 4 cores, 8 threads, 2.80 GHz to 4.70 GHz Turbo)

Operating System
(Dell Technologies recommends Windows 11 Pro for business)
Windows 10 Pro (Windows 11 Pro license included), English, French, Spanish

Graphics Card
Integrated Intel® Iris® Xe Graphics Capable for i7-1165G7 processor

Display
15.6" FHD (1920 x 1080) AG Non-Touch, 250nits, Camera w/shutter & Microphone, WLAN Capable

Memory ⓘ
8 GB, 1 x 8 GB, DDR4, 3200 MHz

Hard Drive
256 GB, M.2, PCIe NVMe, SSD, Class 35

Microsoft Office
No Microsoft Office Included

Security Software
No anti-virus software

Warranty ⓘ
1 Year Hardware Service with Onsite/In-Home Service After Remote Diagnosis

Accidental Damage Service
None

Keyboard
Single Pointing Non-Backlit Keyboard, US English, 10 Key Numpad

Ports
1 USB 3.2 Gen 2x2 Type-C port with DisplayPort alt mode/Power Delivery
2 USB 3.2 Gen 1 Type-A port
1 USB 2.0 port
1 HDMI 1.4a port
1 RJ-45 Ethernet port
1 universal audio port
1 power adapter port

Slots
1 uSD 3.0 card slot
1 uSIM slot (WWAN only)
1 wedge-shaped lock slot

Dimensions & Weight
Height: 0.71 in. (18.06 mm)
Width: 14.2 in. (361 mm)
Depth: 9.5 in. (240.9 mm)
Starting Weight: 3.95 lbs. (1.79 kg)

Camera
720p at 30 fps HD camera, single integrated microphone
720p at 30 fps HD + IR camera, dual-array microphone

Audio and Speakers
Stereo speakers with Realtek Audio Controller, 2W x 2 = 4 W

Wireless
Intel Dual Band Wi-Fi 6 AX201 2x2 802.11ax 160MHz + Bluetooth 5.2

Primary Battery
4 Cell, 54 Wh, ExpressCharge™ Capable

Power
65W AC Adapter, 4.5mm Barrel

Regulatory
Energy Star 8.0 qualified configurations available
EPEAT Gold Registered configurations available, please see
www.epeat.net
Taiwan Green Mark
BFR/PVC Free

Product Safety and Environmental Datasheets
Dell Regulatory Compliance Home Page
Dell and the Environment

Top

Contact Us

λ **Lambda**

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Hsiuyueh Hsu
sonyahsu@louisiana.edu
337-4821667

Date: 7/15/2022
Valid through: 8/14/2022
Payment terms: Due upon receipt

Quote #833-480-259

Lambda Vector	$17,515.00

Operating system: Ubuntu 20.04: Includes Lambda Stack for managing TensorFlow, PyTorch, CUDA, cuDNN, etc.
Processor: Intel Core i9-10900X: 10 cores, 3.70 GHz, 19.25 MB cache
CPU Cooler: Air cooling
GPUs: 2x RTX A6000 with NVLink
Memory: 64 GB
Operating system drive: 1 TB SSD (NVMe)
Data drive: No data drive
Network: 2x 1 gigabit LAN (RJ45)
Case: Lambda Vector case
Warranty & support: 3-year Lambda Premium Support: 3-year warranty + priority technical support

Items: $17,515.00
Total before shipping/taxes: $17,515.00

Taxes and duties may apply. Order subject to Terms of Service.

Appendix B

CHICO STATE | ENTERPRISES

INVOICE

Invoice:	SP006593
Customer No:	007825
Contract #:	
Invoice Date:	11/15/2021
Due Date:	01/14/2022

Terms: DUE UPON RECEIPT

To: UNIVERSITY OF LOUISIANA - LAFAYETTE
301 EAST LEWIS STREET
LAFAYETTE, LA 70504

For questions concerning this invoice please, contact:
Accounts Receivable 530-898-3539 or email:
cseaccountsreceivable@csuchico.edu

Printed By: TBEC

Project	Object	Invoice Date	Quantity	Description	Amount
751010000 / SP6722704	61300	11/15/2021	1.00	2022 SAP Hosting Fee	$8,000.00
				Total Due	$8,000.00

01/01/2022 – 12/31/2022 SAP Hosting Fee

Please include the invoice number with your payment.

If payment is not received within 60 days of invoice date, your service will be suspended.

Total Due This Invoice: $8000.00

Due to security reasons, we can only share banking information directly with the person who is processing the payment. Please have this person reach out sapucc.admin@csuchico.edu for a secure link. This link will expire in 2 days.

* Please note our name has changed *

PLEASE RETURN THIS PORTION WITH YOUR PAYMENT

Remit and make check payable to:

CHICO STATE | ENTERPRISES

Chico State Enterprises
Accounts Receivable
25 Main Street, Suite 203

Invoice:	SP006593
Customer No:	007825
PO Number:	
Invoice Date:	11/15/2021
Total Amount Due:	$8,000.00