NDSU Technology Action Plan Request

I. Action Plan Introduction and Authorizations

NDSU ORGANIZATION OR UNIT
Information Technology Services

TITLE OF PROJECT
Lecture Capture Functionality in Additional Classrooms

Project Duration (3 years maximum) From: July 1, 2011 To: December 1, 2011

Type of Project (Check one) New X Previously Submitted Renewal

Total Technology Fee Request $28,206.00

Project Director Nancy Lilleberg

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E-mail: nancy.lilleberg@ndsu.edu

Name (Type or Print) Signature Date
Project Director Nancy Lilleberg
Unit Head Jean Ostrom-Blonigen
IT Division Consultant
Melissa Stotz

Executive Summary (maximum of 175 words)

Instructional Services / ITS would like to equip an additional two classrooms for Lecture Capture functionality. Previous Technology Fee proposals that were funded equipped one classroom and a portable cart for Lecture Capture for a pilot phase. NDSU is now ready to move out of pilot phase and into additional implementation.

Lecture Capture technology allows an instructor to teach a class face to face to students while capturing everything that is happening in class, including screen content, audio, and video. Lecture Capture solutions then upload the captured audio/video/screen data to a server and reformat it into Web output. The stored archives of captured classes are easily accessed through Blackboard.

Students find Lecture Capture helpful for:
- Preparing for tests and assignments
- Playback audio rates can be changed to allow for better comprehension of instructors who are hard to understand, or for ESL students
- Students who missed class can access the missed content
- Students can **bookmark troublesome concepts** in class via iPhones and outside of class through the product
- Students can revisit troublesome concepts easily by **searching for keywords**
NDSU Technology Action Plan Request

II. Project Overview

1. How does this project meet student needs?

Here is a screen shot of the Tegrity Lecture Capture solution. This is what the student would see.

Students would use the Lecture Capture functionality to:
- Prepare for tests and assignments
- Alter playback audio rates
- Access the missed content
- **Bookmark troublesome concepts**
- Search for troublesome concepts

Four professors are piloting the lecture capture technology during spring semester of 2011, and one instructor piloted it during fall semester, 2010. Please refer to page 8 (Supporting Documentation) to view usage statistics.

2. What audience does this project directly serve? What audience is indirectly served? How many students are affected?

Students registered in classes that used Lecture Capture would be directly served. By choosing a classroom that is used by instructors willing to use the technology, we plan to maximize the usage of it. The chosen classrooms would be Loftsgard 114 and Sudro 24 - larger well-used lecture halls which would potentially serve 347 students at any given time.

Another use for the captured lectures would be to offer more of the large, lecture-based general studies classes as online classes instead. The lectures that were captured in face-to-face classes would be repurposed to online classes, increasing the registration options of students seeking to satisfy their graduation requirements. The online students would be another audience directly served.

Currently, Sudro 27 (120) and CIE 102 (80) are outfitted, and Minard 135 (39) and Renaissance 114 (70) will be installed in March, 2011. (Seating capacity for each room is in parenthesis.) This adds up to 309 seats at any given time that could use the lecture capture technology.

3. For projects that target a subset of NDSU's students, please describe the possibility for broader application in the future.

As funds become available to equip more classrooms for Lecture Capture, more students and instructors will be served. Distance and Continuing Education and ITS will work to increase the use of Lecture Capture on campus, including equipping additional classrooms as possible. This, in turn, increases the likelihood for more online courses and the growth of NDSU’s Distance Education offerings.

4. Describe both the immediate and long term impact of this project.

If the funds are secured in time for Fall semester 2011, Loftsgard 114 and Sudro 24 will be equipped for Lecture Capture so that instructors teaching in those classrooms can record their classes. The students in the classes
could view the recordings as needed for the reasons listed earlier in this proposal. Studies have shown that if Lecture Capture is incorporated in a class and the students use it for review, student retention and grades improve. NDSU will purchase a license for Tegrity, the software and server hosting we are currently piloting, allowing more instructors to participate. (The free Tegrity pilot is limited to four instructors and ends after spring semester.)

5. Who will pay for ongoing expenses following the technology fee funded portion of this project (e.g., who will replace hardware or software after it has reached its end of life)?

By equipping classrooms with this functionality, Distance and Continuing Education and Information Technology Services are moving the Lecture Capture project into a new phase that will increase usage of the technology. That being said, we still consider Lecture Capture as a pilot project, so ongoing funding has not been identified. As the pilot grows to fruition, this matter will need to be addressed. Distance and continuing Education has expressed interest in partially funding the Tegrity license, contingent on their budget.

6. Describe how this project will follow NDSU's best practices in information technology. (Please make sure the NDSU IT Division staff you consulted signs in Part I of this form.)

- According to a 2009 study by Wainhouse Research, 24% of the universities polled consider Lecture Capture as “mainstream use,” 37% report “some use” and 29% report “may use soon” which leaves only 11% as “will not use.” These figures show that Lecture Capture is becoming an mainstream technology. NDSU and its students do not want to be left out of this proven technology.
- Lecture Capture is an improvement over podcasts of lectures because of the ability to bookmark and search the captures, which is much more time efficient for student use.
- More and more instructors are using captured lectures as a way to reduce required seat time. This blended approach to classes has been well received by students who appreciate the flexibility of completing class work when they prefer to.
- Lecture Capture works especially well in subject areas where students benefit from repeated viewing of content, as when complex information is discussed or formulas are written on a board.

Within the Division of Information Technology, Lecture Capture mostly affects Information Technology Services since the solution being considered will be outsourced for server needs. The Instructional Services area of ITS would provide the training and support for instructors and students using Tegrity. The Blackboard Application Developer from Enterprise Computing and Infrastructure has been involved with related Blackboard building block installations.

7. What service on campus is most similar to the one proposed here? How does this project differ?

The IVN (Interactive Video Network) classrooms are the closest thing to Lecture Capture that NDSU has, in that instructors who teach in the IVN classrooms can teach a face-to-face class while recording the class for later playback.

The difference between IVN and Lecture Capture is twofold. The output of Lecture Capture is more user-friendly because it is easily searchable and bookmarked by the student. The archives of an IVN class are just linear recordings so that students would have to either watch the whole session, or fast forward through it to find specific subject matter.

The other difference between IVN and Lecture Capture is that there are a set number of IVN rooms on campus with none of them seating more than 40-50 students. With Lecture Capture, we want to equip the larger lecture halls that seat over 100 students to get the best return for our investment and so that we serve the largest number of students.
NDSU Technology Action Plan Request

III. Project Description

With the help of this action plan funding, Information Technology Services will equip Loftsgard 114 and Sudro 24 with the following equipment:

- Pan-tilt zoom camera
- Touch panel controller
- Pressure sensitive mats that control the camera
- Video capture cards
- Wireless microphone
- Resource controller (the “brains” which tie everything together)
- Additional required equipment for integration

The planned classroom equipment is generic enough to work with any Lecture Capture system that NDSU (or possibly the University system) would decide to use. Our pilot has been with the Tegrity system.

This Technology Fee action plan will partially pay for the Tegrity license and hosting. Tegrity takes the raw data from the media components, processes and renders the data into user-friendly recordings that are stored and streamed from Tegrity’s servers via our NDSU Blackboard courses. Tegrity organizes the recordings and integrates with Blackboard so that only the enrolled students can access the class’s recordings. It also provides reports and statistics for the instructors and administrators. Instructors can see where students have bookmarked portions of the recordings, thereby receiving excellent feedback about where additional help is needed. Tegrity is considered a “turn-key system” in that the learning curve for the instructor and students is very low, and it does not require daily system administration. Tegrity is robust enough to actually process the data from one class while the next class is using the classroom equipment.
NDSU Technology Action Plan Request

IV. Milestones

List the date for each project milestone. These milestones should represent the significant accomplishments that will be associated with the action plan. For each milestone, please indicate its expected outcome and the means for assessing that outcome. (The table may be extended as needed.)

<table>
<thead>
<tr>
<th>Date</th>
<th>Milestone</th>
<th>Expected Outcomes</th>
<th>Means of Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. July 15, 2011</td>
<td>Equipment is ordered for the 2 classrooms</td>
<td>Equipment order that falls within our budget.</td>
<td>Orders are submitted</td>
</tr>
<tr>
<td>2. August 1-14, 2011</td>
<td>Install equipment in the 2 classrooms</td>
<td>Lecture Capture equipment is securely mounted in the classrooms</td>
<td>Installation is finished</td>
</tr>
<tr>
<td>3. August 15-22</td>
<td>Train participating instructors how to use the Tegrity system</td>
<td>All interested instructors are trained</td>
<td>Instructor level of confidence</td>
</tr>
<tr>
<td>4. August 22, 2011</td>
<td>Participating instructors start recording their classes, and their students receive instructions on how to use the system</td>
<td>Students have access to documentation. Recorded classes. Instructor and student use of the system.</td>
<td>Tegrity usage statistics for instructors and students</td>
</tr>
<tr>
<td>5. November 30, 2011</td>
<td>Survey of customer satisfaction and the effectiveness of the Tegrity system</td>
<td>Complete surveys by faculty and students who use the system.</td>
<td>Statistics gathered from the survey that will aid in future plans.</td>
</tr>
</tbody>
</table>
NDSU Technology Action Plan Request

V. Supporting Documentation

Fall 2010 Lecture Capture Statistics:

Participating instructors: 1
Participating classes/sections: 1/2 (Genetics 315)
# of students in class(s): 283 students
# of recordings: 76
Average # of unique users / week: ~30
Average # of views / week: ~60
Highest week statistics: 256 views for 2,873 total minutes (48 hours)

Spring 2011 Lecture Capture Statistics: (after 7 weeks)

Participating instructors: 4
Participating classes/sections: 4 courses with a total of 5 sections
# of students in class(s): 30+30+86+86+88 = 360 students
# of recordings: 28+8+12+10=58 recordings
Total # of minutes students listened to recordings: 10,937 minutes (182 hours)

These statistics show the strong usage of the Lecture Capture system by both instructors and students during our pilot. One of the instructors reported, "Several students have told me they really appreciate having Lecture Capture available. . . Last year, I used podcasting with the help of DCE. The students weren’t all that favorable with that technology. Personally, podcasting was more work for me whereas Lecture Capture is a breeze!"
### NDSU ORGANIZATION OR UNIT

Information Technology Services

### PROJECT DIRECTOR(S)
(Must be NDSU faculty or staff)
Nancy Lilieberg

<table>
<thead>
<tr>
<th>A. Salaries and Wages (Number)</th>
<th>Number of Months</th>
<th>FUNDS REQUESTED</th>
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</thead>
<tbody>
<tr>
<td>1. Staff ()</td>
<td></td>
<td>$ 0.00</td>
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<tr>
<td>2. Graduate Students ()</td>
<td></td>
<td>$ 0.00</td>
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<tr>
<td>3. Undergraduate Students ()</td>
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<tr>
<th>B. Total Salary and Wages (Sum A.1., A.2., and A.3.)</th>
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<th>C. Fringe Benefits</th>
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<tr>
<th>D. Total Salaries (Sum B and C)</th>
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<tr>
<th>E. Equipment (List each item; include installation and maintenance costs in your estimates)</th>
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<tbody>
<tr>
<td>1. Pan/tilt/zoom Camera $1,625.00 X 2</td>
<td>$3,350.00</td>
</tr>
<tr>
<td>2. Crestron Control Equipment $2,500.00 X 2</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>3. Wireless microphone system $600.00 X 2</td>
<td>$1,200.00</td>
</tr>
<tr>
<td>4. Touch panel control $2000 X 2</td>
<td>$4,000.00</td>
</tr>
<tr>
<td>5. Video capture equipment $1,300.00 X 2</td>
<td>$2,600.00</td>
</tr>
<tr>
<td>6. Pressure sensitive mats (sets of 3) $603 X 2</td>
<td>$1,206.00</td>
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<tr>
<td>(Cost of equipping one classroom = $8,628)</td>
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<tr>
<th>F. Total Equipment (Sum items in E.)</th>
<th>$17,256.00</th>
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<tr>
<th>G. Materials and Supplies (List each item)</th>
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<tbody>
<tr>
<td>1. Rubber floor mats to protect the pressure sensitive control mats $210 X 2</td>
<td>$420</td>
</tr>
<tr>
<td>2. Tegrity licensing $10,000 X 1</td>
<td>$10,000</td>
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<tr>
<td>3. Cat5e cable (200 feet) $215 X 2</td>
<td>$430.00</td>
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<tr>
<th>H. Total Materials and Supplies (Sum items in G)</th>
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<table>
<thead>
<tr>
<th>I. Total Salaries; Equipment; Materials and Supplies (Sum: Line D + Line F + Line H)</th>
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<th>J. Total Technology Fee Request</th>
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<tr>
<th>K. Match (Describe in Match Section)</th>
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<tr>
<th>L. Total Project Expenditure (Sum: Line J + Line K)</th>
<th>$30,706 to $35,706</th>
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NDSU Technology Action Plan Request

VII. Budget Justification

After a successful pilot of the Lecture Capture technology, it is time to equip another two classrooms with the necessary camera, controls, mats, microphone and related hardware. Instructors that teach in Loftsgard 114 have already asked if the classroom could be equipped because they are already using Lecture Capture via the portable cart that the Technology Fee funded two years ago. This ties up the cart in one classroom for most of the time. If we equip the classroom, the cart will be freed for guest lecturers and other similar events. Because of the heavy usage that the cart has seen in Loftsgard 114, we know that the installed equipment will also be put to good use.

Another classroom that promises heavy use of the technology is Sudro 24. The Pharmacy and Nursing faculty have expressed a lot of interest in this technology, so it serves the students well to target classrooms in these areas. Other faculty across campus can also use the Sudro classrooms. We hope that as classrooms become equipped, we can work with the Registrar’s office to deliberately place interested instructors in the specialized rooms. Minard 138 is our backup plan if we decided not to equip Sudro 24 for some reason.

After spring semester 2011, we cannot continue to use the Tegrity system without purchasing a license. Currently, the company allows us to use it as a pilot, but the pilot phase is done after spring semester and it limited to 4 instructors. After receiving good feedback and statistics about the Tegrity system, we believe that it is time to purchase a license for the upcoming academic year, thereby allowing more than 4 instructors to participate. We already know of a few who are waiting to be able to use Tegrity, and with communication to instructors who teach in the equipped classrooms, we anticipate additional instructor requests.

By equipping classrooms with this technology, we create a system that is “turnkey” for the instructor, thereby increasing the likelihood of faculty usage and subsequent student usage. By tying the control of the audio, video and screen capture into the classroom touchscreen systems, faculty usage comes as a touch of a button, similar to what they are already used to, and by installing the pressure sensitive mats in the front of the room by the teaching station, white board and another station, the camera will follow the action automatically according to the feedback from the three mats.
NDSU Technology Action Plan Request

VIII. Budget Match

Distance and Continuing Education (DCE) and Information Technology Services (ITS) are working together on the Lecture Capture project.

Tegrity Licensing:

Distance and Continuing Education will fund the annual support fee ($2,500) of the Tegrity license that is not covered by the $10,000 license fee budgeted in this proposal. The amount of licensing needed will depend on the number of hours recorded and/or the number of students using the system. Tegrity licenses occur in tiers, and the pricing is decided by what tier we use. The requested $10,000 is the base fee needed to have a license, and DCE will cover the cost above that base amount. The next tier costs an additional $5,000 annually for an additional 100 hours of recording.

From DCE – Tegrity expenses of $2,500 to $7,500, depending on license needed.

Instructor and Student Support:

The technology staff members in Instructional Services of ITS and in Distance and Continuing Education are committed to supporting the Lecture Capture technology on campus. This involves one-on-one instruction on the use of the equipment, installing the software and hardware with the excellent assistance from the ITS Classroom Technology group, documentation on the Web, and training materials. The support will involve multiple areas of ITS – the TLMC, the Help Desk, the Classroom Technology group and Instructional Services.

The project team will continue to seek out additional funding from other sources, such as departments and grants. As classrooms are added or remodeled, we will work towards adding Lecture Capture functionality to the classrooms as they are built or remodeled. Upcoming possibilities include the remodeling of Minard hall and Stevens Auditorium.