**Executive Summary (maximum of 175 words)**

Stevens Auditorium will be remodeled this summer, thanks to funding from Gate City Bank. Initially, the plans included Lecture Capture functionality, but the funding for it was stripped from the plans. Stevens Auditorium needs Lecture Capture more than any other room on campus because of the sheer number of students who would be served. Instructional Services hopes that the Technology Fee committee will agree and fund the equipment needed.

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.
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 find Lecture Capture helpful for:
* Preparing for tests and assignments
* Playback speeds can be adjusted to enable better student comprehension of material, particularly if the instructor is difficult to understand or if the student speaks English as a second language
* Students who missed class can access the missed content
* Students can bookmark troublesome concepts in class via iPhones and outside of class through the Lecture Capture product
* Students can revisit troublesome concepts easily by searching for keywords

Obstacles to Treating RA

- Incomplete understanding of etiology
- Inability to make an early diagnosis
- Disease heterogeneity
- Limited ability to recognize those at risk
- Lack of rheumatologists

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 equipping Stevens Auditorium for Lecture Capture, there is the potential for serving as many as 3,500 students each semester. Instructional Services would target the professors how teach in Stevens Auditorium, stressing what teaching and learning benefits occur with Lecture Capture.

In addition, lectures captured in face-to-face classes could be repurposed for use in online classes, increasing the registration options of students seeking to satisfy their graduation requirements. Therefore, online students would be another audience directly served through this project.

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 summer 2012, Stevens Auditorium will be equipped for Lecture Capture as the building is renovated so that instructors teaching in those classrooms during the fall 2012 semester can record their classes. The students in the classes could view the recordings as needed for the reasons listed previously in this proposal. Studies have shown that if Lecture Capture is incorporated in a class and students use it for review, student retention and grades improve.
NDSU continues to purchase more licensing for Tegrity, the software and server hosting we currently use. The statewide “Maximizing Results through Efficiencies” mandate from the Higher Education Board includes Lecture Capture as an instructional technology that could be available in all North Dakota higher education institutions. An appointed committee is researching Tegrity and Panopto and has received encouraging bids from both companies. Use of Lecture Capture will be more widespread as the technology becomes more affordable with statewide contracts, but the individual institutions will still be responsible for equipping the classrooms. Equipping Stevens Auditorium is an excellent step towards this future goal.

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, The State Board of Higher Education, NDSU 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. Unfortunately, ongoing funding has not been identified. As the technology grows to fruition, this matter will need to be addressed. Distance and Continuing Education has expressed interest in continuing to fund 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 at a time that is convenient for them.
- 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 because the solution being considered will be outsourced for server needs. The Instructional Services area of ITS will 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 Tegrity / 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 students are required 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 large lecture halls like Stevens Auditorium to get the best return for our investment and so that we serve the largest number of students.
III. Project Description

With the help of this action plan funding, Information Technology Services will equip Stevens Auditorium with the following equipment:

Vaddio autotrak IR camera tracking system w/ cameras and microphone: $18,000  
Video and control cabling: $1000  
Crestron CP2e controller: $1500  
Crestron TMPC-9 touch panel: $2000  
2- Epiphan DVI2PCI Video capture card: $2000 (1000 each, 2000 total)

Total equipment cost: $24,500

With the equipment above, a fully automated tracking camera would follow the person wearing the tracking lanyard nearly anywhere they moved in the auditorium. In addition to full automated tracking, this system records High Definition 1080p video. More information about how this system works can be found in the following video: [http://player.vimeo.com/video/36224204](http://player.vimeo.com/video/36224204)

The planned classroom equipment is generic enough to work with any Lecture Capture system that NDSU (or the N.D. University system) would decide to use.

NDSU currently uses Tegrity for Lecture Capture. Tegrity processes the raw data from the media components, 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.
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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. May 2012</td>
<td>Equipment is ordered for Stevens Auditorium</td>
<td>Equipment order that falls within our budget.</td>
<td>Orders are submitted</td>
</tr>
<tr>
<td>2. Summer 2012</td>
<td>Install equipment in the auditorium</td>
<td>Lecture Capture equipment is securely mounted in the classrooms</td>
<td>Installation is finished</td>
</tr>
<tr>
<td>3. August 2012</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 2012</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 2012</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>
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 viewed/listened to recordings: 10,937 minutes (182 hours)

Spring 2012 Lecture Capture Statistics: (January 9th to March 9th)

Participating Instructors: 16
Participating # classes: 16 courses (including a weekly departmental graduate seminar)
Approximate # of students in classes: 1300+
# of recordings during current semester: 322
# of views during current semester: 7716
Total # of minutes students viewed/listened to recordings: 227,700 (3795 hours)

These statistics show the strong usage of the Lecture Capture system by both instructors and students. Below are some quotes from faculty regarding Tegrity lecture capture:

"I just wanted to let you know how much I appreciate having Tegrity!! I had to cancel class on Tuesday because I was home with a sick child. However, I was able to record my lecture from home and post it on Blackboard by the time my class would’ve been held. It was easy as can be and I literally did not get 1 complaint or technologic issue reported to me from the students. So, thanks for your support of this software--it is great."

"I know from comments on my teaching evaluations that the students really appreciated being able to view portions of the lectures again."

"Most students are glad to know it’s there if they get sick or otherwise have to miss a class. A few students told me they had already been audio recording lectures with their own devices, so this should provide a better quality recording for them."
## NDSU Technology Action Plan Request

### VI. Budget

**NDSU ORGANIZATION OR UNIT**

Information Technology Services

**PROJECT DIRECTOR(S)**

(Must be NDSU faculty or staff)

Nancy Lilleberg

<table>
<thead>
<tr>
<th>A. Salaries and Wages (Number)</th>
<th>Number of Months</th>
<th>FUNDS REQUESTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Staff ()</td>
<td></td>
<td>$ 0.00</td>
</tr>
<tr>
<td>2. Graduate Students ()</td>
<td></td>
<td>$ 0.00</td>
</tr>
<tr>
<td>3. Undergraduate Students ()</td>
<td></td>
<td>$ 0.00</td>
</tr>
</tbody>
</table>

**B. Total Salary and Wages (Sum A.1., A.2., and A.3.)**

$ 0.00

**C. Fringe Benefits**

$ 0.00

**D. Total Salaries (Sum B and C)**

$ 0.00

**E. Equipment (List each item; include installation and maintenance costs in your estimates)**

- Vaddio autotratk IR camera tracking system w/ cameras and microphone: $18,000
- Crestron CP2e controller: $1500
- Crestron TMPC-9 touch panel: $2000
- Epiphan DV12PCI Video capture card: $2000 (1000 each, 2000 total)

**F. Total Equipment (Sum items in E.)**

$23,500.00

**G. Materials and Supplies (List each item)**

- Video and control cabling: $1000

**H. Total Materials and Supplies (Sum items in G)**

$24,500.00

**I. Total Salaries; Equipment; Materials and Supplies (Sum: Line D + Line F + Line H)**

$24,500.00

**J. Total Technology Fee Request**

$24,500.00

**K. Match (Describe in Match Section)**

$10,000.00

**L. Total Project Expenditure (Sum: Line J + Line K)**

$34,500.00
VII. Budget Justification

After a successful year using the Lecture Capture technology, it is time to equip Stevens Auditorium with the necessary camera, controls, and related hardware. Adding the Lecture Capture technology during the planned summertime remodel of the auditorium, as opposed to adding if after the remodel, will save time and money.

By the end of spring semester 2012, we will need to purchase additional Tegrity licensing. This is evidence of the increasing popularity of this technology among faculty and students. Distance and Continuing Education has agreed to purchase the additional hours needed. With communication to instructors who teach in the equipped classrooms, we anticipate additional instructor requests for access to Lecture Capture.

By equipping the auditorium 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. Also, by installing the Vaddio autotrack IR, the camera will follow the instructor’s movements automatically.

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 additional support ($10,000 per 250 stored hours of video) of the Tegrity license as space is used up, contingent on their departmental budget. The amount of licensing needed will depend on the number of hours recorded and/or the number of students using the system.

From DCE – Tegrity expenses of $10,000, depending on needed licensing.

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 Technology Learning & Media Center, the Help Desk, the Classroom Technology group and Instructional Services.

In the future, 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. Possibilities include the remodeling of Minard Hall.