

# **Classroom Improvement Project [CIP IT]—Adding Instructional Technology to UMass Amherst Classrooms**

**Friday, August 26, 2005**

**by**

**Richard Rogers**

**Faculty Advisor to the Provost for Undergraduate Education**

**Issue:** Lack of Instructional Technology in our Classrooms preventing greater use of IT

This issue was addressed by the Instructional Technology Task Force, which was part of their report submitted to the Provost on June 18, 2004.

**Full Task Force Recommendation:** Install “smart” IT packages in all auditoriums and 80% of all standard classrooms (20 to 100 seats) with half of those done in year 1 and then add more rooms over a 2 to 5 year period. Add classroom technical staff as the number of rooms with IT packages expands. The Faculty Senate’s Undergraduate Education Council endorsed this recommendation at their May 17<sup>th</sup> meeting.

**Estimated New Funding Needs:** \$2.1 million in year 1, \$4.6 million by year 3 and \$8.7 million total for the full five year plan.

To see the report as submitted see: <http://www.umass.edu/provost/initiatives/it/finalITreport.pdf>

## **A Revised, more modest, Plan:**

Discussions this past summer and fall between Provost Charlena Seymour, Chief Information Officer John Dubach, Chancellor John Lombardi and Richard Rogers, Faculty Advisor to the Provost, have led to a revised plan. We hope to begin installing Instructional Technology packages into some of the classrooms now scheduled for normal room improvements during the summer of 2005 ready for Fall 05 use. Since money is tight, we will reduce the number of rooms and monitor use to determine how many additional rooms must be planned for after the first wave of improvements.

We are now suggesting a first year plan with expenditures to add IT to 30 standard classrooms, spending \$480,000 in the first year on the actual IT equipment but with a full expenditure of about \$750,000 when including lifecycle costs, maintenance, training, and general support of that equipment. Included is the purchase of 25 portable data projects that AIMS will sign them out to departments on semester-long loans. The details are given below.

UMass Amherst no longer has a Director of AIMS and hence we are without specialized expertise on such IT installations. Richard Rogers has been discussing our plans with The University of Minnesota, which has a classroom IT program in place and has received national recognition for it. They are offering us a “partnership” arrangement whereby they provide consulting, guidance and smart monitoring of the IT equipment (to see their brochure go to: <http://www.umass.edu/provost/initiatives/it/Minnesota.pdf> ). A letter from Jim Gregory, Director of Classroom Technical Services, outlining the overall idea is attached at the end of this revised plan. We have also hired Waveguide of Atlanta Georgia, recommended to us by our current Boston architectural firm (see slides at end) and Scott Walker, President, will be here August 29-30, 2005.

## The Problem:

Our December 2003/January 2004 instructor survey of all UMass Amherst Instructors identified the *largest* impediment to the use of IT on our campus as the lack of classroom equipment. Thus fixing this need is our highest priority.

### UMass-Amherst Classroom Summary [from Classroom Analysis by Facilities Planning]

| Room use Code # | Description                         | Number at UMass | IT Equipment  |
|-----------------|-------------------------------------|-----------------|---|
| 110             | General Classroom (20 to 100 seats) | 217             | Now about 12 rooms; using the Basic Wassman package shown below   |
| 111             | Seminar (under 20 seats)            | 20              | None available for Registrar assignment   |
| 112             | Lecture (100+seats)                 | 20              | Varies but all have basics in acceptable quality given the constraints of working in old auditoriums not designed for IT. |

We must continue to maintain and improve our Lecture Halls and we are to build a 500 seat auditorium for use beginning Fall 2006 and have plans for two more auditoriums as part of the Integrated Life Sciences Building. These auditoriums have IT now and are receiving some attention, but the equipment varies from “state of the art” to outdated but limping along.

It is now time that we focus on our traditional, general purpose classrooms (20 to 100 seats) that are currently without any Instructional Technology beyond overhead projectors and Internet access jacks (a few rooms have been done recently, e.g., Stockbridge 114, Tobin 204, Bartlett 61, Cheneweth 227, ..., Totman 153). These standard classrooms are the focus of this new Classroom Improvement Project with Instructional Technology [CIP IT].

In general, we seek standardization of equipment and interfaces and consider a life of 3 to 10 years. The equipment will include an Internet-based reporting tool that will monitor each room’s equipment use (e.g., hours on each lamp) and send an email to a centralized computer when any problems occur, including if a device is unplugged from the system as we expect security of this equipment to be a major issue. We strongly endorse the model where instructors bring their own laptops (see Hardware report) to the classroom given the multiple platforms and software needs rather than including a computer at each lectern. In addition, we *cannot stress enough that if maintenance and support are not increased we cannot entertain this plan.*

## The Revised Plan—to begin Summer 2005:

**[90 classrooms are improved during the first three years bringing our total to 110 IT standard classrooms; roughly half of the total under Registrar’s control]**

Year 1 (2005): First, assemble the team of people to make this happen. Then, 30 classrooms will receive normal classroom improvements (e.g., attention to floors, walls, desks, lighting, blackboards, and so on) plus an Instructional Technology package that varies from basic to advanced (see attached descriptions for each IT package). These first rooms will be selected by the Design committee based on data from AIMS on equipment delivery to rooms, from existing needs, and to provide geographic equity across the campus. In addition to these 30 rooms, we will include monitoring equipment into all currently existing IT rooms, both auditoriums and IT classrooms (approximately 32 such rooms will need the addition of this equipment and “non-registrar classrooms” will need to be considered for this added security and data monitoring, such as the IT

equipment in the Isenberg School of Management).

Also, since only 30 rooms can be improved in the first year, we plan a one-time purchase of 20 portable data projectors that AIMS can loan to Departments for an entire semester to handle those teaching in non-IT classrooms. This dual approach will both enhance our IT abilities and also allow a comparison of the permanent versus portable solution.

Year 2 (2006), another 30 rooms receive the classroom and IT improvements.

Year 3 (2007), another 30 rooms receive the classroom and IT improvements

Years 4 (2008), 5 (2009), and beyond: Depending on budget, review of success with the revamped IT rooms we will assess the remaining campus needs for additional IT improved classrooms.

### **The CIP IT Team:**

**Project Manager:** We need a short term and long term solution. For the short term, we planned to hire John Stacey, former Director of AIMS who took early retirement last year, to jump start this project, but we decided to handle it internally with Richard Rogers and Steve Pielock. For the long term solution, we should promote someone from the AIMS technical team to this role and once completed have him manage the new classroom IT support unit.

Cost: \$6,000 for the short term assistance of John Stacey and \$10,000 per year for the promotion.

**Support Position:** Once equipment is in place, Fall 2005, we need a person to instruct users to use it well. This position is well suited to Academic Computing as they have strong strengths in conducting workshops, writing documentation and working with instructors.

Cost: \$25,000 per year

**Operations Group:** The project manager will lead the existing AIMS unit in overseeing the bidding and the installation of the equipment. They will need a new technical person.

Cost: \$50,000 per year

**Design Team:** The project will use a temporary design group that will work with existing committees such as the Classroom Improvement Committee to design and select that IT equipment. The members will include OIT personnel representing Networking, Telecommunications, and Academic Computing and Academic Affairs personnel representing The Center for Teaching, AIMS, and faculty, including the Faculty Advisor to the Provost.

Cost: \$0

**Project Schedule:**

First Year, 2005:

**March:** A short term Project Manager is hired, the Design Team is in place and equipment lists are determined.

**April:** An RFI or RFB is announced. The 30 rooms are selected.

**May:** A firm is selected to install the IT equipment in the first 30 classrooms.

**June to August:** Installation of the first 30 rooms.

**September to December:** Collect both quantitative and qualitative data from the equipment and from instructors and students.

**December to January [2006];** Install another set of rooms with IT.

Second and Third years: Repeat the above process but with revisions and refinements based on the feedback and experiences from the first year.

**Spreadsheet of Budget and Assumptions Used:**

5/11/2003 for UNC and 2/23/05 for Umass Amherst  
from UNC

**General Purpose Classrooms  
MUR (Maintenance, Upgrade, and Repair) & Staffing/Support Costs**

|   | year 1           | year 2             | year 3             | year 4             | year 5             | 5 year totals      |
|---|------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|   | FY04/05          | FY05/06            | FY05/06            | FY06/07            | FY07/08            |                    |
| IT basic Classrooms   | 20               | 20                 | 20                 | 14                 | 14                 | 88                 |
| IT advanced classrooms  | 10               | 10                 | 10                 | 6                  | 6                  | 42                 |
| Net Gain per year in number of IT Classrooms*                       | 30               | 30                 | 30                 | 20                 | 20                 | 130                |
| Current year cost to equip the IT rooms                             | \$440,000        | \$440,000          | \$440,000          | \$288,000          | \$288,000          | \$1,896,000        |
| one time start up costs for the project (manager and 20 projectors) | \$46,000         |                    |                    |                    |                    | \$46,000           |
| Cost/year to MAINTAIN all IT classroom equipment                    | \$22,000         | \$44,000           | \$66,000           | \$80,400           | \$94,800           | \$307,200          |
| Cost/year to LIFECYCLE all classroom equipment                      | \$80,667         | \$161,333          | \$242,000          | \$294,800          | \$347,600          | \$1,126,400 a      |
| same idea but at \$2,700 per IT classroom                           | \$81,000         | \$162,000          | \$243,000          | \$297,000          | \$351,000          | \$1,134,000 a      |
| Cost/year to SUPPORT all IT classrooms                              | \$150,000        | \$300,000          | \$450,000          | \$550,000          | \$650,000          | \$2,100,000        |
| Cost/year to Instruct Instructors to use IT classrooms              | \$15,000         | \$20,000           | \$25,000           | \$30,000           | \$35,000           | \$125,000          |
| <b>Total MUR (maint, upgrade, replacement)</b>                      | <b>\$753,667</b> | <b>\$965,333</b>   | <b>\$1,223,000</b> | <b>\$1,243,200</b> | <b>\$1,415,400</b> | <b>\$5,600,600</b> |
| <i>running sum year to year</i>                                     | <i>\$753,667</i> | <i>\$1,719,000</i> | <i>\$2,942,000</i> | <i>\$4,185,200</i> | <i>\$5,600,600</i> |                    |

a: use one of the other but not both

\*assume: the cost per basic IT package remodel is \$12,000  
the cost per advanced IT package remodel is \$20,000  
Umass used 10% of a FTE rather than 15% 0.1

"Ballpark" guidelines from non-UNC-CH sources re: costs:

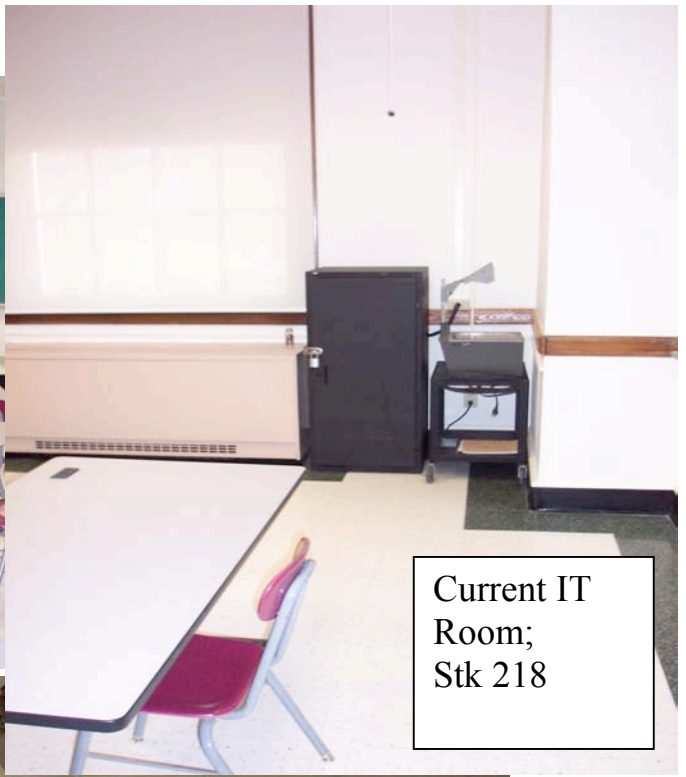
|  | UNC     | Umass  | UNC Estimates (UMass Estimate) |   |
|--|---------|--|--------------------------------|---|
| based on \$50k expenditure   |         |  |                                |   |
| Estimates for maintenance:   |         |  |                                |   |
| 5.0 percent of \$50K room system cost                                | \$2,500 | 5% of IT package   | \$2,500                        | per year per classroom maintenance<br>(stay with 5% of IT package cost)                               |
| Estimates for lifecycling:   |         |  |                                |   |
| 25% of equipment replaced every 3 years                              | \$4,167 | same   |                                |   |
| 25% of equipment replaced every 5 years                              | \$2,500 | same   |                                |   |
| 50% of equipment replaced every 10 years                             | \$2,500 | same   |                                |   |
| Total estimate for lifecycling per \$50K room                        | \$9,167 | but our IT cost is \$12k or \$20k per classroom, not 50k | \$7,000                        | per year per classroom lifecycling, including computer MUR  |
| Estimates for support:<br>(.15 FTE/multimedia classroom (Niemeyer))  |         |  | \$2,700                        | (stay with the original estimates)  |
| 1 FTE @ 45000/yr (inc. benefits) *.15 =                              | \$6,750 | 10% @ 50,000   | \$4,750                        | per year per classroom staff SPA & TEMP support<br>(Use the 10% FTE estimate)                         |
| NOTE: Includes cost for increased classroom computer MUR & support   |         |  |                                |   |
| NOTE: Estimates compare favorably with the numbers provided with ATN |         |  |                                | Note: our costs do not include 'general' classroom upgrades but only the added cost of the IT package |

| UMass Estimates for lifecycling:           | Basic Package | Advanced |   |
|--|---------------|----------|---|
| 25% of equipment replaced every 3 years    | \$1,000       | \$1,667  |   |
| 25% of equipment replaced every 5 years    | \$600         | \$1,000  |   |
| 50% of equipment replaced every 10 years   | \$600         | \$1,000  |   |
| Total estimate for lifecycling per IT room | \$2,200       | \$3,667  | \$2,684.00 weighted average per IT room for UMass |

Note: We used UNC estimates but our IT packages. They combine all classroom maintenance into their budgets whereas we limit to our IT expenditures. No new construction of buildings is included, nor is renovations beyond installing the IT packages.

Current IT Cabinet; Stk 218





Current IT  
Room;  
Stk 218



The Basic Package as this bid shows, minus the Document Camera, but plus PRS wiring, curtains (as needed).

| <div style="text-align: center;"> <b>AV Equipment List</b><br/><br/> <b>UMass-Amherst</b><br/> <b>CIP IT Project</b><br/> <b>October 18, 2005</b> </div> |                                    |                                |                                     |             |   |
|--|------------------------------------|--------------------------------|-------------------------------------|-------------|---|
| Line Diagram Reference   | Description                        | Manufacturer                   | Model Number                        | Qty         |   |
| EXTRON SYS 5 IP  | Presentation Switcher              | Extron                         | System 5ip                          | 1           | 1 |
| ONKYO DV-SP302P  | Single Disc DVD Player             | Onkyo                          | DV-SP302P                           | 1           | 1 |
| JBL CONTROL 26CT   | Ceiling Loudspeaker                | JBL                            | Control 26CT                        | *           | * |
| JVC HR-S3912U  | S-VHS VCR                          | JVC                            | HR-S3912U                           | 1           | 1 |
| CONT RSRCH VCC   | Closed Caption Decoder             | Contemporary Research          | VSCC                                | 1           | 1 |
| TOA A-712  | Mixer / Amplifier (120 watts)      | TOA                            | A-712                               | 1           | 1 |
| SANYO PLC-XP46   | Projector, 4k Lumens, 4:3          | Sanyo                          | PLC-XP46                            | 1           | 2 |
| EXTRON P/2 DA2xi   | VGA Distribution Amplifier         | Extron                         | P/2 DA2xi                           | 0           | 1 |
| BB SW853A-R2   | Serial Controlled RS-232 Switch    | BlackBox                       | SW853A-R2                           | 0           | 1 |
| SHURE MX 392/C   | Boundary microphone                | Shure                          | MX 392/C                            | 1           | 1 |
| SHURE UC4  | Wireless microphone system         | Shure                          | UC4 (Receiver) + UC1 (Lavalier Mic) | 1           | 1 |
| X (n/a)  | Projector Mount                    | Chief                          | RPA Series w/ security cable        | 1           | 2 |
| X (n/a)  | Projection Screen, 60"x80", manual | Da-Lite                        | Model B                             | 1           | 2 |
| X (n/a)  | Power Conditioner/Sequencer        | ETA Systems                    | PD11P                               | 1           | 1 |
| X (n/a)  | Field and Portable Cable Allotment | As noted in specs and drawings | As noted in specs and drawings      | As Required |   |
| X (n/a)  | Misc. Hardware                     | As noted in specs and drawings | As noted in specs and drawings      |             |   |
| X (n/a)  | Main Racks & Accessories           | Middle Atlantic Products       | Slim-5 & Accessories                | 1           | 1 |
| X (n/a)  | Custom Rack Plate                  | Custom                         | Custom                              | 1           | 1 |

Note: the Document Camera is included in the Advanced package. The Advanced Package includes the Basic IT package, plus: The Document Camera; \$2,772 and a second projector: \$4,616

July 30, 2004

To: Professor Richard Rogers, University of Massachusetts Amherst

From: Jim Gregory, Classroom Technical Services, University of Minnesota

Subject: Summary of Technical Classroom Proposal Issues

I have tried to provide a framework for looking at the cost and functionality of your classroom technical upgrade plan which takes advantage of lessons we have learned in the successful implementation of our systems. As an Internal service Organization, we have both the customer and provider perspectives to draw from. Our foremost conclusions result from the payback of investing in well designed control systems that allow ease of use of classroom technology and result in decreased costs in maintenance, increased uptime in the classroom, a decrease in training and support requirements in the classroom, fosters technology use among faculty and results in a reduction of overall costs and an increase in overall operational functionality.

I have organized the analysis of implementation costs with an eye toward separating labor costs out so they can be analyzed toward development of an internal installation, maintenance and support department, something you indicated a need for.

I have tried to use your original format structure to develop comparison costs, but have also expanded the detail for better analysis of issues and tried to drive the perspective toward an integrated plan. I believe your institution is in a good position to take advantage of lessons already learned and the opportunity to access a developed, tested, historically successful and economically designed (from a university's perspective) classroom technology plan.

I believe that it is very difficult to solicit bids and compare prices on an equivalent package of functionality and equipment. A project of this size and complexity must almost be entered into as a partnership, with agreed upon cost, functionality, equipment, support and responsibilities well defined. We have the ability to offer you the advantage of our experience if you are interested in utilizing the core classroom product that we have to offer. Because the research and development costs have already been integrated into an off the shelf product that offers long term support, I believe that the University of Minnesota can offer you a unique classroom package. Supporting the Networked Control System over the network is easy; developing a working relationship for delivery and installation over a long distance requires a more intensive partnership effort.

## Specific Project Issues

Student Response Systems: Because we have no direct experience installing or supporting this at our institution (we are trying to drive the UofM toward a wireless PDA WiFi standard solution with existing infrastructure), and since it can interface into but is not part of our intrinsic design, calculations should include additional conduit costs (\$500 - \$1,500/rm depending on size and layout) and equipment costs based on your ultimate standard. Installation labor costs would not have substantial impact in the overall room upgrade.

Networked Control System: We would set you up with a server and software to manage your system internally (we could remotely manage it for you if your immediate staffing decisions wouldn't support internal ability to handle this).

Cost Comparisons: Cost comparisons between your original vendor's proposal and ours are very difficult as the functionality between rooms with and without control systems are at opposite ends of the spectrums, and the Return On Investment implications far out shadow the original installation costs. Additionally, I do not believe all the electrical and conduit costs were captured in the vendor proposal.

Data Line Costs: Our standard is for four data lines per room. This might have a large impact on installation costs for your institution, so a decision would have to be made here.

Proprietary Software Code: The developed code has support and maintenance costs associated with it. We would have to agree to an annual room maintenance charge that would cover our costs and guarantee your long term program upgrades and viability.

Implementation Schedule: From our own experience, your first year install rate seems very ambitious (a level we wouldn't even attempt with a long established department) considering restricted access times and the necessity for developing your own departmental infrastructure for installation, maintenance and support. I would consider a more evenly distributed schedule, unless early widespread implementation is a very high priority.

Developing a Support Department: With Networked Control Systems, the required support staff is minimized. You did not indicate whether you have existing/future requirements to support a portable pool of equipment requiring delivery, setup and operation for classrooms not yet equipped with technology. Irregardless, the long term support requirements are reduced, and developing internal installation capability can go hand in hand with developing a trained internal repair, maintenance and support operation. The development of this department can also be a major factor in controlling and reducing the installation costs at Amherst. Think of installation labor as part of your departmental salary investment.

Please review the above issues and the accompanying six spreadsheets and then let's talk and go over any questions. I hope you find the above interesting and potentially beneficial to a strategic classroom technology plan at Amherst.