

UNIVERSITY OF MASSACHUSETTS AMHERST
OFFICE OF THE FACULTY SENATE

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PRESENTATION BY MICHAEL MALONE
VICE CHANCELLOR FOR RESEARCH AND ENGAGEMENT

“FRAMEWORK FOR EXCELLENCE - RESEARCH & ENGAGEMENT STRATEGY”

A PDF version of his PowerPoint presentation is available at:
www.umass.edu/senate/fs/minutes/2009-2010/Malone_Powerpoint_02_25_2010.pdf

Vice Chancellor Michael Malone explained that he is here at the invitation of the Faculty Senate to provide a condensed version of a presentation he made to the Board of Trustees’ Science, Technology and Research Committee earlier in the month. He has taken some things out of the presentation because he thinks the Senators already know these things. The items were there primarily for people that were not academics.

The Science, Technology and Research Committee of the Board has been reviewing campus strategies for research on a regular basis to get more familiar with what is happening on each campus. He feels this is a fine idea. Presently, all but one campus have had their review. Vice Chancellor Malone feels it is good to communicate about research to the Board. He explained that there were several different things he would like to stress today during his presentation.

The presentation is roughly to assess where we are in our current situation. This provides a little bit more detail on the Chancellor’s Framework for Excellence. Vice Chancellor Malone explained that he will outline to the Senate why he thinks this suggests a certain growth strategy for us which involves, in part at least, some centers and infrastructures. He said he will also say a few things about engagement because it is a word that is less familiar to everyone than research, though he is not sure that there is a uniform understanding of either one.

The first thing he explained to the Board is that we are one of ten research institutions in New England that are research institutions with ‘very high’ activity, according to the Carnegie Classification. There are two public universities, us and the University of Connecticut in that group; the remaining are private. He wants to put our research activity into a national context and provide some regional exemplars. In the community engagement area, the thing that he wants to stress is a mutually beneficial exchange of knowledge and resources. If we are doing some sort of engagement project, we are partnering to do some things together that we cannot do separately.

In the Carnegie Classification, you can have a ‘very high’ research activity classification for one of two reasons: you are very big and there is a lot of activity or you are not very big and there is lot of per capita activity. The Carnegie Classification system is one of the few classification systems. It is not a ranking system, despite that people often use it that way.

In the Framework for Excellence, one of the overarching goals is that we go from our current position to the top-tier of national research universities. That has been clearly articulated in the Chancellor’s messages to everyone. Where do we stand now? This is a comparison of some metrics that are directly relevant to an institution’s research performance at a place like UMass Amherst. In terms of funding support, that is a means to an end. Other metrics include national academy members, faculty awards, doctorates, and postdoctorates. There are other things that are important at the University, but Vice Chancellor Malone noted that he is only going to talk about the things he is focused on in his role as Vice Chancellor.

This slide shows data for 2008, the last year for which there is a complete data set available. In that year, we raised \$136 million in sponsored research. If you look at the second quartile of research

universities in the United States, and that is defined as any research university receiving more than \$40 million for sponsored research, we compare pretty favorably to that second quartile. We have more national academy members than the median in that quartile, and more faculty awards by a good margin. This was stressed by the Chancellor in his very first address to the campus. We have a fine faculty. We produce more doctorates and have more postdoctorates than the median of that group. He thinks this shows clearly that we are quite competitive and doing better than many with the exception of sponsored research.

Looking at a slightly more prominent group, these are the public AAU universities that are categorized as 'very high' in research by the Carnegie Classification that do not have medical or veterinary schools. There are many other ways to do comparisons. He is sure that as soon as the NRC comes out with their latest report, there will be many more comparisons. He is not trying to do an exhaustive study here; he is trying to give some calibration points. This group is a little stiffer competition. It is a good group to emulate. He feels the AAU has many fine features as a comparison group. The figures shown are the same numbers he showed earlier for UMass Amherst in 2008. The median of the AAU cohort, listed at the top, raised quite a bit more in total research dollars. They also had quite a few more national academy members, more faculty awards (though not by such a high margin), more doctorates and a bit more postdoctorates. The postdoctorates themselves are more a measure of activity than accomplishment, unlike the awards. Most rankings and your public perception not only depend on your per capita productivity, but your size. If you look at that AAU cohort, all these clusters of bars reflect the tenure-system faculty. There are other important components to faculty, like instructors and staff, but it is the tenured faculty that produces the vast majority of national academy members or high-level awards, or are instrumental in sponsored research.

There is one institution in this group that is smaller than we are, Santa Barbara. Everybody else is bigger. Some are just slightly bigger, and some are a lot bigger. If you are comparing with this group, it might be interesting to look at per capita productivity. In a median, normalized per FTE tenure-system faculty member, the pound-for-pound comparison of total research and national academy members, we fall pretty far short, even on a per capita basis in this group. We are definitely comparable in faculty awards, doctorates and postdoctorates. That is an interesting point of comparison. There are two components to getting more competitive. One is that we need to improve per capita productivity in certain areas. Of course, this needs to be done at the departmental level. This is just a summary for the University. You cannot conclude how to change your behavior from these comparisons. You must do a more fine-grained approach and the faculty must get bigger. Somebody has agreed we should be in the AAU. If joining the AAU is, in fact, our goal, and Vice Chancellor Malone noted that he is not suggesting that is our only focus, there is one university significantly smaller than us in the AAU -Santa Barbara.

What is changing? What are the dynamics here? Things are going up and down and there will be more of this given Senator Rosenberg's remarks. Here are the rates of change of the tenured-system faculty. Some universities from the period of '02-08' have been adding faculty, some have not been adding faculty and some have been losing faculty. Rutgers has been losing faculty, Penn State is level, Maryland just about level and Kansas has grown quite a lot. Vice Chancellor Malone does not know why Kansas has grown this much. We have grown in this period by about an average of 1-2% net when the dust settles. That is a good thing. We are growing faster than the median in this group. He does not know what will happen next year, but he does know that some people are doing no hiring and we are doing some hiring. That is a good thing, too.

(Referring to the slides) Here are rates of change for those metrics. If you look at the left-hand side, in total research dollars, you might think there is something missing. The curves are just superimposed. This chart shows the average cohort's rate of change and ours. They are indistinguishable. If you normalize everything to 2002 as 100, we are growing neither faster nor slower than the average. If we keep doing what we have been doing then we are going to go nowhere, unless everybody else collapses. We are similarly situated with some of these other metrics. Some of

these are fairly small numbers so they tend to fluctuate a bit and the average for the group does not tend to fluctuate as much. The key point on this slide is the bottom sentence. We need to accelerate growth if we are going to gain in rankings. If you do not want to gain in rankings, you have Vice Chancellor Malone in the wrong job, which is entirely possible.

Vice Chancellor Malone talked about some accelerators. He explained that we already had one accelerator, the American Recovery and Reinvestment Act (ARRA). We have received just under \$40 million in stimulus funds. We have several proposals remaining, but Vice Chancellor Malone does not think we are going to get much more money. He thinks we received one grant last month. His theory is that some of the agencies are holding their funds over to see if they can fund grants out of other funds or are just tardy at writing rejection letters. The amount of money we have received is not bad, according to Vice Chancellor Malone, not because he has a definitive study but because, if you look at what the federal stimulus did to non-defense R&D agency budgets in FY '09, the stimulus kicked their budgets up by about 23%. Our federal, non-defense R&D budget was up 44% during the same period. It is possible that a few other universities or a smaller group of other universities did way better than everybody else in competing for these grants, but he does not think so. It is too early to have a definitive study for the ARRA funds. The trick is to capitalize on this opportunity to see if we can sustain a higher level of research. Other people, of course, got stimulus money, but we got more than our share.

Vice Chancellor Malone said he would like to talk about a few things we have done and a few things we are doing. There will be some more announcements in the next few weeks and months. Today, Vice Chancellor Malone said a few things about facilities and staff support, seed and matching funds and for those of you interested in private sponsorship of research they will shortly be announcing some simplified standard research agreements and intellectual property procedures. He feels we also must look at whether or not we can diversify some of our funding sources. There are some new opportunities; USDA, for instance, got a significant bump in their funding. The USDA is moving away from formula funding to a competitive research proposal process. This is a good thing. He explained that he will also say a few things about an Innovation Institute, which he will define in a few minutes.

Of course, we both need to hire new faculty to maintain areas of strength. This is more a conversation for Provost Staros, in terms of how that gets implemented. You are probably all aware of the new RFP process which Vice Chancellor Malone said he will come back to in a moment, because that dovetails into Centers or Institutes. He knows that the individual departments know about the faculty RFP hiring. There were nine cluster proposals that were supported. He does not think they have been announced as a comprehensive set so Provost Staros was kind enough to provide this information for him yesterday.

If you see what we are funding in the RFP hiring, we are funding some positions across departments and sometimes across colleges to collaborate on clean energy, health-related research and cellular engineering (another term that is basically biological). Also funded was a very surprising, and quite excellent proposal on Computational Social Science, as well as proposals in Heritage Studies, Language Experimentation and Computation, Millimeter Wave and Terahertz Imaging. He will try to refrain from explaining Millimeter Wave and Terahertz Imaging. Neuro-Developmental Disabilities and Cyber Security were also funded. You will see that some of these proposals are just for one position or two in some cases. This was possible by very carefully hiring in the right area to bridge things that we already have going on. That is a better use of resources. The idea is growing or completing a cluster rather than starting a new cluster.

Vice Chancellor Malone talked about some internal support for research. His office has recently reorganized for various reasons. In the research area, part of the office that was formerly called Research Liaison and Development and some of its staff have moved to University Relations to emphasize research and creative activity in our branding initiative and our communications with the world. We now have an office called Research Development that is going to be focused on and provide four things. One is initiative and proposal development for big proposals, probably about \$1

million a year and more. Loren Walker is the Interim Director. (Loren is here, if you would like to meet him afterwards.) Loren has lots of experience in the office and can tell you about some of the things we are planning. He will discuss that in detail with the Research Council tomorrow if there is time.

We are also going to provide workshops, training and symposia on a regular schedule. We are going to do this for NEA, NEH and probably some more. We are working on plans for that. We are going to provide better intelligence on funding opportunities so that, well before the federal announcement comes out, we will be circuiting some information so that we do not have to react when a RFP is released. We are going to do more on research activity tracking and communications. We will give you some more details on that if you are interested.

You might have noticed on the title slide that Jim Kurose is listed, among other things, as Senior Faculty Advisor. This is a practice that Vice Chancellor Malone plans to continue; occasionally involving senior faculty on senior initiatives. Jim is working with Vice Chancellor Malone one day a week focusing on clean energy. We have a big proposal just getting off the ground. He has been focused on high performance computing. He thinks that needs to be closely coordinated by a senior faculty member with knowledge in the area. We are adding two new professional staff for compliance in human subject research protection and another in animal care. Vice Chancellor Malone feels they have been understaffed in that area.

The Faculty Research Grants were recently announced. We have removed the matching requirement from the grants because we think it locked out a number of disciplines on campus that do not have access to matching funds, practically speaking. Vice Chancellor Malone announced a new book subvention program last week so we can support people in the letter disciplines to get their scholarship in the right places, even if it is a small audience.

The President's Science and Technology and Creative Economy funds are a great source of seed funds. As of one hour ago, we had 11 proposals in the Science and Technology area and 8 proposals in the Creative Economy area. Some of them look quite strong. Vice Chancellor Malone is hoping to provide some campus seed funds. Other than the facilities, the only reason he is able to do any of this is that we have a new budget model for the research area which is now going to depend on some fraction of the indirect cost recovery for the first time in the history of the institution. That is thanks to Chancellor Holub and the Executive Management Team. As research grows, we will have additional resources to add people in compliance. We will be able to add people where we need them, to make sure that the faculty are not, to the extent we can, burdened by some of the things that are necessary to do research, but not the scholarship itself.

We have also integrated federal government relations into the Research Development Office. We want to create a federal strategy that is much more closely integrated with the initiatives that we want to push and the only way we are going to do that is by taking a different approach. Vice Chancellor Malone will be announcing some details on that plan as soon as they are finalized. Part of that program will increase federal agency intelligence. This is where he pleads to his faculty colleagues for help as they start to roll out ways for faculty to participate. For example, if you have been at a workshop or panel or are a former program director at NSF, share that knowledge a little more broadly on campus than it has been shared before. It has been well shared in many departments but the institution is not informed as much as it should be. We want to emphasize research and creative activity in all of our communications and in branding the University. He thinks there are lots of opportunities there and he is working closely with Vice Chancellor Milligan on that.

Vice Chancellor Malone described the idea of starting an Innovation Institute. He stressed that this idea is at the concept stage, and that no decisions have been made. The Institute would be a separate legal entity, often wholly owned from the University. It is basically a mechanism to do research programs, and especially development, in a way that is complementary to campus programs, not competitive. It facilitates new grants and contacts on campus, because there are many organizations

that do not want to sponsor research that cannot take a clear development path. At some point when we are doing development work, it really is not appropriate, for example in thesis work or work that has some publication or confidentiality restrictions. These are not the kind of things we should be doing as an academic institution, but we can partner. Many major research universities have such a mechanism, sometimes through a government lab, sometimes through a private organization. MIT, for instance, collaborates with Lincoln Laboratory; Berkeley, with Lawrence Berkeley National Laboratory; Purdue has Discovery Park; University of Maryland has something. This is not an uncommon model. We are working right now on a business plan for it and will obviously need a lot of planning and consultation.

Another accelerator is in terms of collaborations. As a University, we get our rigor from our academic disciplines. It used to be sufficient to educate people by disciplines and that also gave you your relevance. There could not be a better illustration that we need to work on this than the sordid history of the state budget, here and at many public universities. The public is looking to universities, especially research universities, for relevance in areas that they can clearly identify with: human health, clean energy, sustainable environment, safety and security and economic development or economic progress. This is not the way we are organized. We cannot attack those problems without rigor, we cannot attack those problems without departments, but we cannot also attack them without collaboration and innovation. That requires, many times, interdisciplinary and often inter-institutional collaborations. That is going to be a focus of this research development office: to facilitate proposals that cross college or institutional boundaries. It requires engagement with stakeholders. Many of these extramural grant competitions really require that you have private sector stakeholders. They have to be engaged, not just interested or just present. They actually have to be engaged in doing things.

Vice Chancellor Malone gave several examples of Centers. He noted that this is not meant to be an exhaustive list, just enough to illustrate what he is talking about. Of course, one Center he is familiar with as the former Dean of Engineering is an NSF Engineering Research Center called CASA. That is a collaboration of electrical engineers, computer scientists, atmospheric scientists, meteorologists, operations researchers and sociologists. Not all of the researchers are here at UMass. Some are at Colorado State, some are at Oklahoma, and some in Puerto Rico. There is a longer list of affiliated institutions now. Our key engagement partner is Raytheon, but now there are many more partners. The state, at the time, was able to support us for this specific initiative with \$5 million outside of our University budget. That led in part to the formation of an outfit called the John Adams Innovation Institute which is very important to us and has no money. The leadership there has been provided by David McLaughlin and Jim Kurose, in Director and Co-Directing roles, respectively. The center is in year 7 of 10 years of funding and will ultimately result in \$40 million in funding from NSF. This is the kind of big collaborative proposal Vice Chancellor Malone feels we need to grow our research base.

Another very good example of a Center is the Center for Public Policy and Administration. You will see there are many faculty and departments, nationally prominent grants and projects involving not only academic departments but also the library affiliated with this center. There is a public engagement project that Vice Chancellor Malone feels is very good and very high profile. The national-scale project that Marilyn Billings is involved in is basically this project here at UMass and a project at the National Academy. Those are the two options that NSF chose to fund. That is a very high profile, national, high-impact activity. One of the things that we want to focus on, also in research development, is getting our key senior faculty into talking to policy groups in DC. We could do that in a more organized way, too.

What do you need to do to create these centers? You need some faculty leadership with a track record. You have to be credible, but, beyond that, you do need some coordinated cluster hiring. You need to win some small group grants to be validated. You have to have seed funds; you have to have facilities. That leads up to, for instance, training grants that engage private sector stakeholders and finally to either major extramural support or maybe just major growth in enrollment which is also very good for our programs.

After the campus seed funds have come the Science and Technology (S&T) Seed Funds the President's Office has been able to supply now for five years and going into a sixth year. Those have been pretty successful at providing some bridges to reach major funding. In the science and technology area, for instance, funding for the MassNanoTech program was at least partially helpful in producing a \$40 million NSF Nanotech Center for hierarchical manufacturing and a \$13 million DOE Energy Frontiers Research Center. MASSCREST has had seed funds from lots of places including the S&T Fund. We will be visited next month for another large NSF Center, and the list goes on. There are lots of good examples that show, if we put the right resources together with the right people, we can succeed in this area.

Vice Chancellor Malone thinks there are also great opportunities in the Creative Economy. He feels you can get a lot of bang for the buck of investment in this area. You can see that some of these are focused on the arts, some of them are focused on history, some of them are focused on other issues in the community. That gives us a great engagement vehicle with the community.

Vice Chancellor Malone said that a great piece of infrastructure which happens to be in his division, the UMass Press. The reason why this is important is that it gives us a great vehicle to be known for being involved in high-quality scholarship and reaches out, most of the time actually, to professors at other universities.

We have been working quite vigorously on something that has the fascinating title of New Laboratory Science Building. There is a New Laboratory Science Building that will be located just behind the Integrated Sciences Building. The expectation is that we will break ground perhaps as early as next month and it is slated to be finished in mid-2012. That is a very, very fast track. DCAM, the UMass Building Authority and the campus have been engaged in it and very effectively. The cost of the building so far is \$144 million. The building will be populated by just under 900 people, not when it opens but when it is up and running. The whole building is designed for collaborations. Space in the building will not be allocated to programs or departments, as the Chancellor has said many times. Space will be allocated to clusters of faculty who are doing interdisciplinary projects that need to get together around pieces of equipment or to do things day to day that they cannot effectively do right now. We will announce quite soon what the loading of that building will be. He is working closely with the Provost on that. There were some management questions that have come to Vice Chancellor Malone about the building. He noted that the building will be managed by his office. He will be taking care of running the building centrally.

Vice Chancellor Malone closed with a few things about engagement. There is a regional project that he feels is an exciting example. It is called a Green High Performance Computing Center. The green comes about because the source of energy there has a very low carbon footprint and is pretty inexpensive because Holyoke has the capacity to generate electricity by hydropower and is adding some wind power. The thing that makes it most interesting to us is (on the next slide) a chance to collaborate in a new way with a great group. It will be a collaboration of UMass, MIT, Boston University, and Northeastern University, the State and two private companies so far Cisco and EMC. The technical reason to do it is to put all your little clusters of computers together and make one big cluster. This allows you to do problems that you could not do otherwise. This will also have a great educational component. Rick Adrion has been involved in much more detail than Vice Chancellor Malone has with this project. He is sure Rick would be glad to fill members of the Senate in on some of the details. This is one of the projects that Jim Kurose has been working on very effectively as well, before Vice Chancellor Malone came along.

Vice Chancellor Malone also talked about how all of this research activity impacts our undergraduates. He feels they should get something special at a research university. Commonwealth College is a great starting point. He does not think we should restrict ourselves to that, but it does provide a research experience to lots of students. Research universities ought to get the message out better to the general public about what kind of experience we can provide students in that area. He

thinks it is a great example of the kinds of things you can get here that you cannot get at a lot of other places.