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RP: >> If you haven't already submitted questions, please do so to info@tvworldwide.com. Info@tvworldwide.com. If we aren't able to address your questions here, our general MRI e-mail address for questions is mri@NSF.gov.

CH: >> Randy said I could chime in and start with a couple of pieces of guidance. Based on my observing proposals over the time. First one is in what to do and what not to do. As Randy said I often say the opposite of don't do this is it's not a polar opposite, it's a wide range of possibilities. Some which will work and some which won't. But what I see is when people try to write the proposal that has no weakness, this oftentimes comes when people are resubmitting a previously declined proposal and they're responding to reviewers' comments about what the weaknesses are, and they try to eliminate those weaknesses and they put their focus on writing the proposal that has no weakness. And they're missing I think if larger point, which is we fund proposals that not only have a minimal or no weaknesses, but have great strengths, are very meritorious.

And so the focus needs to, I think, my guidance is that the focus in highlighting your strengths and making sure that you make it clear what the strengths of your proposals are. Because in the end if you don't do that's that's a weakness and reviewers will oftentimes comment upon here was an opportunity for this proposal to illustrate a great strength. They had an opportunity to involve undergraduates. They had an opportunity to do a collaboration, given their locale. And reviewers will see you missed an opportunity to highlight and propose a great strength. So in writing the proposal with no weaknesses, you won't do it. I don't think it's ever been done. And in doing so, you might create a weakness, which is that you haven't highlighted any strengths.

My second one is more aimed at multi-disciplinary, interdisciplinary, given that MRI is a shared use program that is actually a fair number of the proposals are in that category. And that is when enthusiastically describing the research activities that are multi-disciplinary you lose the prioritization, you end up describing everything you can possibly think of that this instrument will be used for and fail to give reviewers a sense of what the most important uses are and what the priorities will be.

An instrument is a limited resource. It cannot be used indefinitely and for unlimited amount of use. It has limited use. So reviewers will want to know what the priorities are. It also helps when NSF reviews that proposal to correct the select, select the correct technical directorates to review it. Oftentimes we'll get feedback from a PI after decline that NSF didn't assign it to the correct division, and despite the comment we'll look at the proposal and be unable to ascertain what the actual priority is.

So if you have multi-disciplinary proposals, multi-disciplinary, interdisciplinary use, which again is probably a majority of the proposals we get, it's important to make sure that the prioritization of that is clear so that reviewers understand first and foremost what activities will be supported. It also helps in the review. Those are my first general comments.

RP:>> I'll chime in, in part because you addressed multi-disciplinary proposals and that's one of the frequently asked questions we get. In particular for the proposal, I'll summarize some of the questions we received in the past is for multi-disciplinary proposals, how are they actually reviewed in the MRI program? And I will mention that our office, the office of integrative activities coordinates the overall program. And I mentioned early on it's in collaboration with many, many program officers across the various divisions and offices at the NSF.

So when a proposal reaches NSF it comes to our office, OIA, and you as a PI are to select the unit that you feel is most appropriate for the review of the proposals or units. I'll come back to that in a moment. You can submit chemistry as the primary unit, but if you feel it has a strong biological sciences component to it, then that's brought out in the proposal you may also select bio as a secondary unit for consideration. That's one way to do it. It flags the proposal at the very beginning it has a multi-disciplinary component.

The primary unit will actually serve as the home ofthe proposal, if the program officers feel that's appropriate. And Craig mentioned we do reserve the right to put proposals in the programs that are most appropriate for it. A proposal will be distributed to the appropriate division for review. But if it's multi-disciplinary, the program officer in that division will in many cases, if they feel that it really truly truly is a multi-disciplinary proposal solicit reviews from another program, for example, chemistry and bio, they may actually put it into a panel if it has a really strong component of bio as well as chemistry, if it's appropriate in that way. Or they may solicit ad hoc reviews, mail reviews to provide a different perspective on the proposal from that other research area that is involved in the proposal. So that's how the proposal may be reviewed. And one of the ways you can help us in that regard is to select as a single copy document, this is always an option, list of suggested reviewers or reviewers not to include. And in particular from multi-disciplinary proposals you may select reviewers that cover the span of research that's covered in the proposals.

Now, those reviewers you suggest are suggestions to the program officer at the discretion of the program officer whether they will use them or can use them due to conflict of interest rules, but that's one of the ways you can actually help to identify proposals that are multi-disciplinary and also provide a means to help in the review process itself.

CH:>> Several possible questions. One here refers to supplementary documentation and what is allowed and/or required in supplementary documentation. The specific question is: Is a letter from a company showing interest in commercialization of a developed instrument allowed and how about if this company is foreign.

Let me address the foreign part first while the MRI program will not fund foreign collaboration we do encourage foreign collaboration. So it would be no difference in that it comes from a foreign company.

Is a letter from a company showing interest in commercialization allowed, the answer is yes. In the institutional support letters, they're allowed to come from institutions and the company is an institution so that would be allowed. The restriction is more geared toward letters of support from individuals whether they be collaborators or potential users. In that case we have a template that we want to see statements of collaboration from those supporters or potential users, and not letters of support from the individuals. But letters of support from a company, an institution are allowed.

And then a related question is in the supplementary document, is there a preferred order that we should put the data management plan to match the commitment letter, the company interest letter in quotes for equipment and components. And there is no particular preferred order. I think you can put it in what order you think would be appropriate. But I think in general we typically see the commitment letters first, followed by quotes for equipment and components to come later and then data management and/or post-doc mentoring plans as a final component. But there's no particular defined order.

RP:>> I'll address a couple of questions. The first one is a rather easy one, is can the PowerPoint slides be made available for us to download for our own information? And the answer will be yes. We will place the PowerPoint slides on our OIA website for MRI, and you can get pencil and paper out and I'll give you the Web address. It was listed on the slides that we have but that won't do any good if you don't have the slides and didn't write it down along the way. If you go to www.nsf.gov/od/oia/programs/mri, you can download those slides. I realize there's a lot of slashing going on. But I'll repeat it one more time. That's www.nsf.gov/od/oia/programs/mri and in a matter of days we'll have the slides available to you.

So another question was one of the recommendations on the slide says demonstrate shared use within the institutions or across institutions. So the question is: Does this mean to include shared use by research groups are not part of the proposing teams may not necessarily use the instrumentation for the research activities described, is this a plus as long as it does not hinder progress on the actual described research?

Basically, you do want to describe the people who are going to be using the instrument, and in particular the major users of the instrument. I particularly wanted to address this question, because it speaks to a question we often get of frequently asked question, which is: How many people should we include in our proposal? It talks about shared use. Should we include 20 or 30 investigators or should we include only a handful of them, what is the right number? Well, the right number depends on your particular circumstances. First and foremost. But basically what reviewers want to do is to understand the science that's going to be enabled by the instrumentation that is being requested and ensure that the people who are going to be the primary users of that instrument have sufficient access to it to make that science outcome obtainable. So if you have 20 or 30 users for an instrument, you may -- that may be appropriate for you. But what reviewers are going to want to know how are they all going to be able to obtain access to that instrument in sufficient time and sufficient periods of time to enable the research that they need to be done. If there are only four or five, six, seven, eight, major users of an instrument, describe them and the research that they're going to be undertaking and convince the

reviewers that really good science is going to be achievable with this instrument and list as a table the minor users of the instrument. Again, it will depend on the individual circumstances of the proposal but do make a distinction between major users and minor users and convince the reviewers that sufficient time, sufficient access is available to make sure that the science that is being proposed can be achievable.

And I'll address one more before turning it back to Craig. The question is if we are selected by our campus to submit a revised MRI instrument development proposal, should we focus on responding to the comments of the reviewers of our first failed submission and refer to this whenever we mention something, or should we write it as it's a first submission with little or no reference to the reviews? Actually, Craig addressed this at some level when he was talking about successful proposal and we do get this question a lot. Some people want to put a direct response at the beginning of a proposal saying the reviewers from our prior submission said this and this and we have responded in this matter. Some people think that's not a good idea because it highlights first and foremost the weaknesses in the prior proposal and tries to convince the reviewers that it's the prior, the current reviewers -- that it's the prior reviewers who should take residence in terms of evaluating a proposal. That is some people find a good method. Some people find that to be a bad method. What we do recommend you do, Craig can comment on this, write a proposal given the reviewer comments that have been provided and try to make it as strong a proposal as possible but conveying that compelling case for what you're trying to do. My piece of advice is to put yourself in the place of a reviewer the reviewers are not necessarily going to be the same reviewers who review your prior submission. It is a new competition. You should conceive of it in that matter and try and provide the most compelling enticing proposal that you can and again put yourself in the place of a reviewer and try and understand what it is that you yourself would want to hear as a reviewer, not just what you want to say as a PI.

CH:>> I think that's pretty good advice. I'm actually going to move on then to two questions. One referring to documentation and another one referring to eligible costs that are related by the commonality of being relative to the data management plan. So first the documentation.

Since MRI does not support research activity, would a statement that "no data management plan is required" be an acceptable data management plan. I think that's a good question. I think it's tempting since we don't fund research, we only fund the acquisition and development installation and commissioning of the instrument and not the subsequent research that you might be tempted to say no data management plan is required. But let me ask you to consider this, which is, as stewards of that instrument and responsible for the acquisition, you are also setting down all requirements for the instrument that include sensitivity, throughput, speed, those kinds of things, it also -- there are requirements for that relate to data management. Things like how much data storage will be on the machine. How much, what kinds of input output for data is required? Are plotters required. Is there a integrated system that will convert raw data to metadata. These are all things that you as the acquirer or developer of the instrument should take into account. Our expectation is that data management plans will focus on that. It's your management plan to identify what your needs in terms of data management are. What the potential users will generate in terms of data. What those needs will translate to requirements for your instrument, what those needs will translate to requirements for the

processes by which you manage your instrument. Will your policy be to you take your data with you or will your policy be you provide temporary storage for that data. Those are all things you should consider while acquiring or developing the instrument. So our expectation is that your data management plan will address those types of things.

A subsequent question of eligible cost is we are wondering if you could provide examples of expenses that would be allowable for an acquisition proposal to be able to assist in the data management plan. Of course if the requirements for future users and what their probable data management plans will translate to requirements for your instrument, those translate to actual hardware that you'll need, then that should be part of your proposal. And it should be justified. For example, if you're going to provide disk storage integral to the instrument that's dedicated and integrated with the instrument then that should be described and justified in the proposal and that essentially is an incremental cost of implementing the data management plan. But there's other costs, for example, if the processes for data management requires some sort of setup of a common website or even writing down procedures relative to data management plan, the cost of, incremental cost associated with preparing and implementing those processes would be allowable. The key here is to try to attach the cost that you're thinking about to the decision to have a data management plan and what that data management plan looks like. Costs that are then incurred after the fact that are variable, not variable, that scale with the amount of activity. For example, actually transferring data from one place to the next as part of a data management plan, as part of a research project. Those costs would not be allowed. So the costs are limited to just those procedures, processes and hardware that you have to put in place to make them data managment plans possible, but the actual operation of transferring data from one place to another that sort of activity all scales with the research is a research cost would not be part of the incremental costs of implementing the data management plan. Any questions you have, again, on this can be sent to us at MRI@NSF.com if you have specific examples you want clarification on.

RP:>> I'll answer two. One of them is fairly straightforward. If I can find it here. The question is does one need to have other NSF funding to be successful in the MRI competition? And there I will point out that the solicitation explicitly mentioned that investigators need not have any federal support in order to apply for or receive an NSF MRI proposal. Having said that, what I do want to point out is that reviewers do need to understand what the scientific outcome of the instrument are likely to be. In the management plan, in the project description, you actually do need to describe what the anticipated outcomes of the research are going to be. If you're at a primarily undergraduate institution, the output may not be as great as it is at a research institution, but are you going to be providing refereed papers? Are you going to be presenting papers at scientific conferences? Are you going to be presenting data that will inform public policy, whatever the result is anticipated to be, the reviewers need to understand that there will be a viable outcome at the end of the proposal.

It does not depend on whether you have successful NSF or other federal grants at the moment. But that's one piece of the puzzle you will need to convince reviewers. The other aspect of that is you do need to make sure that the reviewers understand that the operations and maintenance of the instrument will be successful. That people will be using the instrument as much as possible, that the down time will be minimal in the instrument. And understand where that support is going to come from

if it's not coming from grants, if it's coming from the institution, you do need to make sure that you convey that sense of why the proposal should be funded and what the successful outcomes are going to be for a successful, competitive MRI proposal, whether you have NSF or other funding or not. So I'll address one other question, which is -- sorry, catch my breath here -- will the MRI program be more interested in supporting, A, an enabling major instrument that will stimulate emerging multi-disciplinary collaborative research at an institute or B a scientifically driven or needed major instrument, that is we've got the collaborative ideas already but are missing the instrument. It's not merely an enabling tool for the future but a tool that is highly needed for realizing existing research ideas and ideas going on at the institute. I find it interesting the way they phrase that because the first portion of that question, I think, an enabling major research instrument that will stimulate emerging multi-disciplinary collaborative research is certainly something we value enormously. But to me that falls under the category of "if we have it, they will come" kind of idea. Which is addressing potentially transformative research down the way, multi-disciplinary collaborative research, stimulate emerging collaborative research. That is something that NSF truly does value. There's no reason why one should not be able to submit such a proposal however it does have some caveats, risks that you need to address there. And that's the key is to address those issues head on. In particular, if you haven't identified what the research is going to be, it's going to be very difficult for the reviewers to put it into the context of why this particular instrument is needed. If you want to have an instrument and describe in a very sound manner what the potential research is going to be and why this particular instrument will enable that cutting edge research down the way, that is something that you should certainly consider. But, again, you have to really justify the instrument and the context of what those emerging research areas are going to be.

The second part of this question is more of a science-driven issue where basically you know what science you want to do, and because of those science drivers, you know you have to have a particular instrument in order to enable it. That's a very viable mechanism for an MRI proposal as well. Lends itself to very strong management plan, that is, we understand what science we're going to accomplish, and this is the instrument that we know we need. We've identified the capabilities for the instrument. And the scale of the projects that we're going to undertake are -- they require this particular instrument. It provides a neat and tight connection between the scale and scope of the research as well as the instrument that you are requesting.

So both mechanisms are viable. They lend themselves to different ways to describe themselves in proposals. I don't discourage either one of them. I encourage both of them.

CH:>> I'll take this next one because I talked to this on a slide and I looked at the time of this when it came in at 2:54. It meant I already did my slide and they didn't get the difference. So the question is: Please clarify the difference between consortium and collaboration.

So a collaboration is an NSF-wide term that describes the sharing of responsibilities and funding for a specific project. It's not specific to MRI. And the focus is on how that work in the project is shared and how the funding to accomplish that work is shared. So it's a funding mechanism term. Consortium on the other hand is a submission mechanism term that MRI uses to describe the submission process and

the eligibility of organizations to participate not necessarily in the funding and the doing the work of the project, but in that as well as the long-term management and involvement in who owns the instrument, who has access to the instrument and how it's going to be used as a shared use instrument. So let me walk you through that real quickly.

In collaboration, again, the focus is on the funding mechanism and the sharing of work and the project. For an MRI project that is the acquisition and the development of an instrument. That's what the project is for, that's what the funding is for. There's multiple ways to share that work and share the funding. Assuming again, of course, that the lead organizations are eligible to submit, they can submit a single proposal with sub awards to other organizations to share the work share the responsibility of acquisition and development of the instrument as well as the funding. They can also submit a single proposal with no sub awards where the collaboration is simply unfunded collaboration. Or they can submit linked collaborative which is separate proposals from multiple organizations obviously each organization has to be eligible to submit on its own, and again it's a funding mechanism where the proposals are jointly considered as link collaborative but separate awards were made to each organization involved. Again, those organizations, because they're submitting, have to be eligible to submit.

Consortium on the other hand is a submission mechanism that allows the broader impact for the MRI program in terms of where the instruments are and who can use the instruments and who has access no the instruments. It's a way of getting instruments into positions and into the hands of people where they can be broadly used as shared instruments. So reviewing the allowable, institutions that are visible to submit, again, consistent with the MRI strategic goals, we allow submissions from institutions of higher learning. And from nonprofit, non-degreed granting organizations that are involved in the nation's research and/or educational activities. Those are the first two primary organizations. Translated to our strategic goals, we want to put instruments into their hands to use. So now remember we're talking about in the consortium, the mission mechanism aspect, we're talking about the future use of the instrument and once it's been acquired or developed. But we also want to encourage consortiums, legally incorporated consortiums to be able to ask for instruments and then obviously take over ownership and management of those instruments, because they are legally incorporated consortiums. They already have the mechanism to do shared use, broad base of U.S. scientists and engineers.

But we wanted to extend that even further into an MRI consortium mechanism. Again for submission purposes to state that organization or excuse me consortiums that are informally formed for the purpose of an MRI proposal where there's a good idea for an instrument that can be used in a shared use mode that we wanted to create that mechanism so we have the MRI consortium. This now allows for institutions that are otherwise unable to participate in the long-term ownership and management of the instrument to participate and the benefit is potentially it opens it up to a broader set of scientists and engineers if it's constructed correctly.

So our requirements are at least two of the consortium members be eligible to submit on their own, translate, they would be eligible to own this instrument on their own and manage it on their own if they

ask for it on their own. They can also include the institutional organization that is not eligible to submit a proposal on their own. These typically, although not exclusively, would be laboratories of the federal agencies like FFARDCs of the National Labs system. They are by -- most of the cases and they're housing the instrument as a consortium member, they are not just innocent bystanders. They're actually involved in who has access to the instrument because it would be on their property and within their control. They may not fund the maintenance or operations of the instrument, but they may fund the supporting equipment. If it's a large detector end station on top of some other instrumentation, the organization that is not eligible might be responsible for everything but the final instrument. So they have a role in it. So we want to have them in an MRI consortium to find that way and then they'll have an institution and commitment letter which indicates that they're part of this, that they understand the priority and that we won't end up buying and procuring an instrument that has no home. So that's the difference.

Collaboration is NSF wide refers to the funding mechanism, the shared responsibility and funding for the acquisition or development, and consortium is more asking the question of who is eligible to submit and therefore who is eligible to be involved in the ownership, operation in the long term use, shared use of the MRI instrument. If that doesn't answer the question, then please e-mail again. We'll try one more time again.

RP:>> Related question. So how are proposals submitted as collaboration counted toward institutional limits. The submitted as linked collaborative that means they're going to share the funding in separate awards and each of the linked collaborative proposals counts against the organization that submits it. If any of those proposals or any single proposal contains sub awards, then the sub awards are counted against the institution that receives a sub award in the following way. Any sub award for acquisition is counted. Any sub award in a development proposal is counted against the submission limit of that sub award recipient if the amount of funding they receive is greater than 20 percent of the total amount requested of NSF, not the total amount of the project but the total amount of funding requests from NSF in that proposal.

So the last thing I'll say is this: A sub award that's part of a proposal, and that proposal is part of a linked collaborative system, it's 20 percent of the proposal that it's in, not 20 percent of the total linked. So it's a bit complicated. Again, if you have any questions we encourage you to give us your specifics and we'll help you with guidance. Linked collaborative counts against everybody who submits a proposal award with a sub award if the sub award is in an acquisition proposal it counts, if it's in a development proposal it only counts if it's more than 20 percent of the total cost requested from NSF in that proposal.

CH:>> I'll take a few here. The first couple are rather easy. The one was simply to restate the address for the questions. It appears one of us may have misspoken. Since we're running out of time if we do not get to your question during this webcast, please feel free to send your questions to mri@nsf.gov. That's mri@nsf.gov.

The second question that's relatively easy as least I believe. How can one access the transcript for the question-and-answer session. It's my understanding that TV worldwide bringing you this webcast will

send this information to NSF and then we can then provide it as a link on our website, which I again indicated earlier.

So a couple of related questions is one can a post-doc salary be funded by MRI if a strong justification is provided? Related type of question is whether or not funds for personnel to work on assembly and commission are allowed. And if the institution is providing such personnel can their time and associate's salary be included in the 30 percent cost sharing. And then a somewhat related question again is for instrument acquisition awards, will the MRI fund a service agreement for maintenance of the instrument. They all fall under the category of eligible MRI expenses.

So the first one is can a post-doc's salary be funded by MRI if strong justification is provided. And the answer is yes. But again if it's an acquisition proposal, eligible MRI expenses include the acquisition of the instrument and operations and maintenance and conditioning of the instrument that is being requested. Those are MRI eligible expenses and salary of personnel associated with those activities can be requested but the request must be commensurate with the scale and scope of the instrument request and also the time frame that's required in order to provide for those services.

Operation and maintenance, commissioning, you can ask for salary requests but they should be commensurate with the scale and scope of the instrument. So if it's a bachelor level person who is needed as a technician for operations and maintenance post-doc would not be a reasonable request. Same if it's a masters level or Ph.D. level or faculty member that would certainly be allowable as well. But again remember the timing of the requirement. Sometimes we get faculty members who say that they are the ones who are going to be operating and maintaining an instrument and they therefore need two months of summer support. The natural question from a reviewer what happens to the other ten months out of the year if you only focus two months out of the year. Make sure it's commensurate with the scale scope and requirements of the instrument. But post-docs are eligible request. And also for development proposals, salary requests for those people who are directly involved in the development of the instrument are also eligible requests and certainly a post-doc has a more natural connection perhaps. Make sure if a post-doc is requested that a post-doc mentoring plan is included in the proposal. Again, salary to work on assembly and commission, I mentioned that. So I won't follow through. Other than to stay that the question was also can you provide that as cost share.

Basically what you need to do when you determine a budget for an MRI proposal is to determine how much it's going to take for you to accomplish the proposal, the activities at hand. That's your total project cost. Out of that total project costs that are all MRI eligible expenses, as I talked about just briefly here and are listed in the solicitation, all total project costs must be MRI eligible and 30 percent of the total project cost is what you need to provide as cost sharing. So anything that's out of that total project cost must be MRI eligible and cost sharing should be part of that as well. So associated salary, including fringe benefits can also be included as cost sharing.

Finally can a service agreement for the maintenance of the agreement be requested. The answer is yes. That's part of the M in O and M for maintenance. So within the award period and again acquisition

proposals can be for up to three years, service agreements can actually be requested, but again for the award period.

RP:>> Okay. I have a couple of questions that are related to what I'll call alignment or consistency with the purpose of the MRI program. The first one is would it be an important positive factor for MRI if the instrument development that's proposed is expected to be serve as a local center for inter disciplinary research with collaborative participation of several local educational and research institutions? Or would this be considered as more appropriate for other programs and would weaken the MRI proposal?

We are about shared use instrumentation and collaboration and interdisciplinary research, so it is very likely if you had a proposal that had meaningful interaction in that sort of center. As a center for interdisciplinary research with collaborative participation from institutions around the area, that I think would be quite consistent with the MRI solicitation. Quite aligned, your task is then to convince reviewers that those collaborations are real. That there's a high likelihood of the result and impacts you have produced will result in this instrument being put in that position. And there also needs to be an effective management plan. It's important to address that, especially when you're suggesting shared use amongst many organizations. There usually needs to be a strong management plan to describe how the resource again instrument is a limited resource, how it will be shared.

And then the second question is can you comment on how novel the instrument should be, which is proposed to be developed, in particular, if a further modification of an instrument reported before or developed before as long as it allows for new types of measurements. Well, I can tell you that new is important. It needs to have new capability that otherwise is not available someplace else. And so it typically new type of measurement would be consistent with that. As I mentioned, things like it has to have new sensitivity, better sensitivity, new type of measurement, open up a new field, these are all kinds of things that can be novel. Again being novel or new isn't not sufficient. It's important to follow it up why is that important to a discipline, what does it do, what does an impact to a discipline or science and engineering or to any of the broader impact criteria. So for an example one might have a very novel instrument and novel that it's accessible to persons with disability. That would make it very knew and unique, and all of its impact in terms of being novel is in the broader impact capability but it was something we specifically call out in merit review for the MRI program. So yes, new types of measurement, typically you make novel. If those types of measurements are important in the field that's important. But it could also be novel in other ways. So keep that in mind.

RP:>> So I think on that note we've addressed the last question that we're able to address, and again we will get back to those of you who have submitted questions and we were not able to respond to in the next several days. Feel free to send e-mail at MRI@NSF.gov for further questions. Again, thank you for attending this webcast. [End of webcast]