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Technology Budget Forecasting for Small-to-Midsize Schools

Tuesday, May 14, 2019

1:00PM – 2:00PM Eastern

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>> I'll be your moderator for today's webinar. We would like to take a moment to thank Quest for their sponsorship of the 2019 Educause live webinars. Quest is the go-to solution that helps universities and schools better move, manage, and secure their Microsoft infrastructure. You are probably familiar with the interface for our webinar, but here are a few reminders. We hope you'll join us in making this session interactive. Use the chat box on the left to submit questions, share resources and comments. If you're tweeting, please use the tag #EDULIVE-that's E-D-U-L-I-V-E. If you have any audio issues, click on the link in the lower left-hand corner. And, at any time you can direct a private message to "Technical Help" by clicking in the top-right corner of the Chat Pod. A drop-down menu will appear where you can select "Start Chat With" and "Hosts." The session recording and slides will be archived later today on the EDUCAUSE Live! website. Our webinar today is Technology Budget Forecasting for Small-to-Midsize Schools. This webinar will cover the value of 5-year IT budget forecasting and an approach to developing and managing an integrated 5-year budget including staffing, life-cycle replacement, and license or services renewals using a relatively simple spreadsheet template. We are delighted to be joined by Simon Blackwell, Chief Transformation Officer at Mount Saint Mary's University. Mr. Blackwell has 30 years of technology and change management experience across multiple industries from start-ups to Fortune 100 companies. He has spent the last 4 years in higher education. We are also joined by Bill Davies, Vice President of Business and Finance at Mount Saint Mary's University. Mr. Davies has over 30 years' experience as a CPA, Treasurer, and Chief Financial Officer across multiple industries. He has spent the last 7 years in higher education. Thanks to both Simon and Bill for joining us here today. And with that, let's begin.  
  
 >> Hi, thanks. Welcome everybody. I'll dive right in here and give you an agenda and move around to different speakers. The first thing we're going to do is go through poll results, so people have a good sense of who else is on the call today. And so Bill and I can tune our commentary. Bill will speak to why a multi-year approach and then I'll give you an overview of the spread sheet model. And finally, a demo of the model and talk through how you might use it, change it, how the formulas are built, et cetera. With that, I will hand it back to Adam who will go through the poll results.  
  
 >> Great. Thank you, Simon. So, pulling up the polls that we had at the start of the event, and feel free if you haven't voted yet to do so now. We are taking a quick look at the results. I see we have about 10 in the 200 to 500 range. And another 10 or so with over 2,000. I see a few more votes popping in there. So just leaving that for a moment as you all have a chance to share your responses. On to the next poll as well, we asked what financial management system are you using. And it looks like a significant number of our participants are using an another. So, if you clicked other in this poll, we would love to have more information on that. So, feel free to share your notes with us in the chat box on the left side of the screen. Quite a few have select Ellucian-banner. And a smattering of other options today. So, moving on to our third poll, what is your I.T. annual operational budget excluding staff? And it looks like the roughly $2 million range there has the most votes from the participants joining us today. I see a few more votes coming in confirming that range and climbing up to about 5 million. Wonderful. Thank you everyone for your responses there. And pulling up our next poll, what is your I.T. annual capital budget excluding staff? And here we're seeing about up to 1 million is the dominant voting category. Followed closely Behind by up to 2 million. Wonderful. And seeing the additional votes confirming those two. So, moving on to our next poll, how many I.T. staff do you have? And once again, feel free to vote if you didn't have a chance to before the vote started. The vast majority are in the 20 to 50 staff range. And the second largest category is over 50. So good for us to know. Thank you for sharing that information with us. And with that, I believe we have one more poll left. So, moving over to that one, how many students do you have? It looks like our early voting showed the majority of institutions with 2,000 to 5,000. But I'm seeing the higher numbers climbing quickly here, bowing the 5,000 to 10,000 range and the 10,000 and over. Excellent. And that's it for the polls today. So, I will turn it back over to our presenters.  
  
 >> Thanks very much, Adam. And thank you for the information, folks. I hope all of you find this useful. Some of you with the larger end may find this somewhat simplistic, but we'll see. And I'll just make a couple comments in the chat, people saw SAP for their financial systems. So just to give you a perspective on Mount Saint Mary's', we completed a move to workday a couple years ago now, but we are on Jenzabar for student billing and we are in the midst of a reimplementation for the student system and saying on that going forward. We have about 1600 undergrads and 600 continuing or graduate students. Our undergrads are 95% residential. And the continuing or grad watt attended a separate campus about 30 miles from the main campus, most of the classes in the evenings. I have 13 full-time staff in the technology organization, not could wanting myself. I am effectively the CIO but have other responsibilities as well. And we have 18 student workers and interns. 10 to 12 of those student workers are working our help desk area. And the rest are interns in our infrastructure or cybersecurity space because we have a bachelor's program in cybersecurity and actively train and use our students. We are also in the I.T. organization here responsible for all audio-visual needs around campus. So my staff handle all of the projectors, loaner equipment for shows, for some of the student activities when we have speakers coming in, et cetera. My operational budge set about $1.8 million a year without the people cost on top. And the capital varies year to year with a Max of 1.5. So that's the kind of scope of our organization here. With that, I will hand it off to Bill.  
  
 >> Okay, thank you, Simon. You know, the interesting thing for a multi-year approach gives you a perspective over time. If you go with a single 46-year approach, you're going to miss what's happen off in the distance. Many times it's challenging itself from a budget perspective to try to push it out, but it's not going to go away. So, looking at a multi-year approach, you probably get more money to understand how you have to manage your resources over time. One of the things that we found, it gives us the ability to redistribute our resources so that we know when the high points and low points are. And realistically, it's got to manage and marry up to the multi-year financial budget and the leverage for the university. Certainly, working very closely with our I.T. and Simon and his entire staff, the important thing is predictability, what’s on the horizon and setting ourselves up for the future. A couple things, nobody likes surprises. So, if you can plan your work, work your plan, explain to your board what you need to do and how you're doing it, I think that's very if he connives. And you have to partner with your I.T. partners so this aspect is resourced and balanced with the resource needs of the university. So multi-year gives us that ability. We've had basic budgeting and then when we sit down and manage and massage it, it's extremely important to see how it all fits together.  
  
 >> So before we jump into questions about this, I'll throw in a couple antidotes from the I.T. side of the fence, so to speak. The first bullet, you will probably get more money. When I arrived, everybody said good luck with Bill, he's the no man. He's saying no, you will never get anything out of him. And what I found is that the problem is in the past, the I.T. organization here would budget reactively. The phone system would start failing and say, well, we need money for it. And Bill would say, well, we didn't put anything in the budget. And so, the staff were constantly told to make do with what they have and not spend until the last minute because obviously if something broke, Bill would pay for that. What I found by giving Bill a five-year forecast and plan is that actually, he's pretty reasonable at providing money and there's been a couple years where I don't want to ask for more money because I don't have the staff to execute on it. And then the leverage with vendors, you know, Bill, the CFO's office needs to leverage the money of the university in a variety of different ways. But with a five-year budget, I can go to my vendors, go to the value added resellers from whom we buy and say this is what my spend going to look like over the next five year, what can you do for me now in terms of discounts? So, it gets them to drop the prices on some things knowing that there's more business around the corner. Certainly, we've had happier customers as a result of this. Quite frequently people are happy to hear, oh, not next year but definitely going to do it the year after? Yes, oh, okay. What they don't like is never knowing. In terms of my staff, I would say one of the huge benefits off having this in place has been that the staff know what's coming. They know what's around the corner. And no surprises for them. And they're feeling much better about their work. And I think, you know, Bill's mentioned the board likes to see us spend our money effectively and efficiently and doesn't like surprises. With that, I'll pause for a moment and open up for any questions before we continue.  
  
 >> Yeah, Simon, I don't see any questions quite yet that came in. So please go ahead. And I'll be keeping an eye on chat for you.  
  
 >> Okay, thank you. So, I'll give you a quick overview of the model, and then we will actually dive into it. I will share the spread sheet with you and walk through it with you. So, we put together a model that aligns to our university growth and strategy. One of the challenges that I've always found with financial management packages, the SAPs and Workdays of the world, you can put together sophisticated financial planning tools but it's often hard to align with either your institutional strategies or your day-to-day operational needs. So, we put together a model that allows us to do that is a simple cut and paste process into the formal budget tools that we're using Workday for that. As a matter of fact, I've had the delightful experience now of sending us off to our head budget manager in the finance department a couple time, you know, this is so simple, I'll just paste it into the budget planning tool myself instead of you having to go through that. So that's been a very effective partnership with finance and as you will see in a minute, we can really align with what we're doing with where the university is planning to go and where the university is at. The model we're using has a five-year rolling people operational and capital forecast. I've typically found that, you know, three years isn't long enough. It's hard to get stuff, you know, big stuff done in medium to large size organizations in three year, usually takes five. Seven is a bit long, a bit too hypothetical in future because of the pace of change of technology. Although arguably, in some case, seven years would make a bit more sense because we have some things on the life cycle replacement that we do every seven years rather than every five. So, for instance, our phone system is scheduled for a major upgrade or complete rollover about every seven or eight years. In the model I'll show, you will see that we are keeping track of when we do renewals on our software licenses and what the life psych system for the equipment that we're rolling over. So, unless there's any quick question, I will dive into the spread sheet.  
  
 >> You know, actually I did have a couple questions that came in. Fred is asking about your move to Workday, if you had challenges moving the administrative spend from capx to opex.  
  
 >> I will let Bill speak to that.  
  
 >> That might be the easiest. Well, yes, that was a challenge. But what we had to do, we had to illustrate what our five-year forecast is. What we as an institution had done is under-spent in operating cost for technology and our plan was growth. And we had to support the growth and make sure that what we're billing, we can actually afford and not just grow and then a year later realize that we can't hold it together. So, by having a multi-year budget and forecasting process, we illustrated what are the infrastructure necessary to support that growth. So, our board and our management were prepared to accept the additional cost. Because what we really did is, we cannot continue to spend or underspend on technology because technology is one of the leading drivers to understanding our business. So, it was a bump in the road. We had to explain why, but the more important thing is, getting the return on investment and making sure that we can manage our business better.  
  
 >> Okay, great. And Joe is asking if you're considering financials in relation to cloud architecture options for five-year budgeting?  
  
 >> So Joe, what I presume you're asking about is are we comparing the cost of operating our technology in the cloud verses operating our technology internally. And we actually already went through that exercise prior to putting together this model. It's one of the first things I did when I arrived at the institution. And we are consciously moving everything to -- almost everything to the cloud. Now one of the advantages that we had is we have very little custom software here. We're not building much else. So, our need for internal servers is extraordinarily low. Another than some stuff that we have in academic, but they run their own racks of servers for teaching classes and technology and that kind of thing. So, we didn't have a complex analysis that was required to move to the cloud.  
  
 >> Okay --  
  
 >> Does that answer your question? Go ahead and type in some more, Joe.  
  
 >> Simon, one thing I would add is that by going to the cloud, we avoided the challenge to not upgrade our software. And fall behind. So, by going to a cloud, we got more of a constant cost that would be upgraded based upon the provider. And felt that we would be more current with our software upgrades.  
  
 >> And one other question, how accurate have you found the five-year budget forecast to be? Are you finding that you need make changes in middle of the cycle? How is that going for you?  
  
 >> I have not found that we have to make changes in middle of the cycle. We've had to move things from one cost center to another, but I'd say, before we put the five-year model in place which went in place two years ago now, kind of took two years to get my head wrapped around how to run the organization here, we were kind of constantly bouncing back and forth, should we capitalize this? An operational expense? We didn't budget for this. Now it's pretty much a monthly check-in, you know, are we on track? Is there anything we need to be shifting around? And I would say, no, it's been pretty accurate on the expense side. And if anything, there's been a couple cases when we underspent on the capital side, because if you look back at the numbers of people and staffing in the organization, we're on the small-size relative to who most people were saying during the survey, even though our budge set aligned with the majority of people from a staff perspective, I have far fewer staff. I did a calculation a few months ago, and of my total budget, putting aside capital, but if you added my expense budget and my people budget together, my people are only about 30% of my operational expense budget which is not normal. Typically, usually running around 50/50 or worse than that. And for me, I see that as a really good indicator, we are spending the money on technology to get things done. Rather than on a bunch of custom stuff or dealing with other issues.  
  
 >> O great. I'm going to let you continue your presentation and holding a couple of other questions as we keep going.  
  
 >> Okay. Thank you. So, I'm going to share my screen now. Let's see if I can get the right one up. Let's see, second monitor. Share. Nope. I got the wrong one.  
  
 >> It's actually --  
  
 >> You're seeing the spread sheet?  
  
 >> Yes, we are.  
  
 >> All right. So, this is the five-year model. The numbers in here are not reflective of mount St. Mary's, just made up. But the model is very close to the mod that he will we're using internally. The internal one is slightly more complex because we do some pivots on it and actually allocate things to cost centers. So, in my internal model, between columns H and a You Will See Four Different Cost Centers and the Different -- Columns H and I, You Will See Four Different Cost Centers. And Then I Have a which is kind of a research r and d. In that one, Bill, if you want. So first I've got head count, the most important part of a model, of course, because the head count is what drives getting things done. And I start with the help desk. We have a director in there. I have a account of one. Everything in the spread sheet is driven by count, whether you have counts of router, people, et cetera. Followed by a unit cost. And then how many units that I have for any given year, 2019 through '23,' 24, and that multiplies out for the following years. You will see that some of the cells actually have formulas in them. You will see a red tick next to them. I put notes on them. For instance, at the top, we have the stuff that's driving the university, which is really how many students do we have, faculty, staff, admin, et cetera. And our adjunct count is driven by how many students we have, how many sections an adjunct usually teaches minus the number of faculty that we have at an 85% efficiency load divided by the number of sections so. This says okay, our full-time faculty can handle this many sections. This many students requires how many sections? What's the reminder we need to have? About 82 adjuncts to cover the rest of that. And then that is then used, of course, as part of the formula for the total number of people. If we go to the help desk here, on a level three help desk person, I have a formula that says I have to have one level three for every three level two help desk folks. That's in the top here. Then I've got three level twos. Which is based on how many student workers I have. And then I've got 10 student workers which is assuming that one student worker can deal with 200 end-users. So that's the math for figuring out how many people do I need in the help desk. I go down to the infrastructure level, I have a director, an assistant director of cybersecurity. That's just coming into play now. We are in-sourcing some of the cybersecurity operations and using students to do a lot more work for us there. The network engineer. And network engineer one. I'm not using the number of devices on the network to compute about how many network engineers that we need. Theoretically, you could. I have seen places that do that. But we're not. I'm just eye balling, we need about this network engineers to do this amount of work. And then finally, we have this security analysts who are student workers who will be working in the cyber operations center that we are firing up as we insource the managed service that we have been using for cybersecurity in the past. Once again, we have a bachelor's program in cybersecurity here. And we have an articulation agreement with a community college inbound and a graduate program at a nearby university outbound. So we should be able to get some qualified folks to do that. And they'll be graduated with plenty of real experience. Then I have a solution delivery team that focus on the big software, the help desk is responsible for the desk top stuff, audio-visual, mobile phone, et cetera. The solution delivery area are responsible for management of the ERP, the student information system, our admissions and advancement systems and doing integration work that we have to do between those things. The compensations you see in here, although these are not the actual head count that we have filling these roles specifically, I have a few in there, the compensation levels are approximately what we are paying for those types of jobs for those interested. Now I roll down into the software side of things. I will have a subcategory, a category over the left, people and then software. Subcategory, whether it's enterprise or desktop. We have items so under enterprise, student information system, learning management system, event management, Office 365 and the type of category that it is whether it's head count, expense, or capital. So, we ended up moving a capital to opex so all of the big enterprise software is running in the cloud on a monthly expense. I've got my renewal month in here. I don't track the renewal year because I've just found it useful to always go back every year in a particular month and look at the contract for opportunities, perhaps, to reat the negotiate early or give us plenty of heads up on when we're going to need to cancel or look at replatforming things. The life cycle of the system, I put a short life psych until this model. Most institutions are running at probably a 10-year life cycle on their SIS and LMS. Event management and Office 365. You can see the unit cost here. I have 150, no, not only paying $150 for the student information system. It's 150 times the number of students that we have. Which is 1650, which gives you a total amount for the year of 247,500. Once again, that's not the actual amount that we're paying. And that further down, so you can see the LMS driven by the number of student, Office 365 is driven by the total number of people using it, student, faculty, staff, and admin. So, you see a higher number there. We have creative cloud which is not available to our students. It's only available to staff and faculty. So you see a 380 there rather than the student number. And as we go on down, you will see a variety of other thing, I'm not going to go through every item on the sheet, but licensed device, we got spam filter, also licensed on a total number of people in the organization. Third party security services which I made an error, that should disappear in the next couple years. And you can see it calculated it out, and immediately my budgets up at the top actually shifted. So, you can see the changes from 519,344 in 2021, if I put that in as 0, down to 423,000. Down into the hardware space, our core, router, capital, you can see the life cycle replace. Time, the total count of the number of units, and when I'm forecasting the next units to be coming in. The life cycle replacement time that you see in here is not actually used in formulas in the units per year. It's just for eye balling the budget. So that I know that I should have things happening about every five years. So for instance, I've got a two in here, and a two and actually that's probably the result of a cut and paste error. I only need to have two of them rather than -- oh, I know what happened, I copied from a real budget and we decided to move things from 2021 to 2022 when we did this year's budget. As part of some rearchitecting of the network UPSs. Switches and router, and so on down the line. And then at the very bottom -- and this does not include all of our equipment type, we have other stuff at the edge, other things at the core. We've got other types of classrooms rather than regular and lecture. A lecture classroom is just a larger classroom for us with specialized sound system, et cetera, in it. And then I have a space for special projects at the bottom. And because of the cat Governorrization, it roll -- -- because of the categorizations, it rolls to the top. When we want to go from one year to another, the organization resisted putting this together so, we hit year two, when I said it's time to re-budget, and I did, what I'm about to do right now. Highlighted columns, hit Control cap c, went over one, hit Control V and then -- oops, I hit the control. Sorry about that. I've got to make a shift. I had a growth rate in there. And I got -- hit Control C on all of my cost area, Control V and then go in and tweak these numbers up here to what the forecast is for the coming year. So, let's say that we've got to change our years here. And based on our performance this year, we're not going to be targeting 1700 like we originally said. We're going to be at 1675, enrollment down a little bit. That changes the forecast going out, and due to some faculty retirement, we went down to 125 this year, you can note that the adjunct number shifted. And we had a couple of retirements this year that we decided not to report, to do on the staff and admin side, so down to 248. I'll carry that 248 forward. And then it's time to go in and say, okay, folks, for 2021 during the budget cycle, is this really what we want to be doing this next year? Are these the right people counts? Are these the right number of switches and routers to be replacing? You never know, something may have failed that we didn't expect to fail. Or we may have seen an architecture opportunity approach us and we decided to roll out earlier. And go back to the last year '24 and start pulling things out. So, for instance, say, okay, we don't need to do the 30. That was from the year before. We don't need to do the -- let's see we do need to do the two because we're doing two every year. We need eight UPSs because we're doing eight every year. Laptops, classrooms, we still need to be doing nine a year because we're on a seven-year cycle. That looks good. Dorms, that looks good. And so, ongoing all the way through the list making sure that we're adjusting to the five-year numbers. So that's the way the spread sheet works. Not particularly sophisticated. And you know, in its current form but it was designed to use internally. You do have to be careful about how you're cutting and pasting things around. I think Bill will attest to his and his team's astonishment how quickly we turned around the budget. Bill  
  
 >> Absolutely. You can look at the column and see what's happening each year for that type of cost. And the type of cost over time, you can see when you see an emphasis in it. So, I can tell you that in prior development of the budget, when we just looked annually, we had no visibility by pushing something out what does it mean? Now you can see by pushing something out, what does it mean? And also accelerating what does it mean. So by category rising based upon units and head count and relationships to our size, you can really get a feel for how we're managing the area. It's a quick adjustment. And you know, when we're working on other areas of the budget, all right, well, I need more out of the technology, spend less, we can have a quick conversation and say, yes, it can work or no, it can't. So, I think it's very helpful.  
  
 >> So I have a couple of questions that have come in. If it's okay to present those to you?  
  
 >> Yeah, now is a great time.  
  
 >> Okay. Great. So, Joe asks about your process for maintaining the current status of moneys that are spent in the business analytical system to provide an instant look at current numbers. Are you using anything like that?  
  
 >> That's one of the reasons that we implemented Workday, we were having a hard time with the reporting out of Jenzabar and implemented Workday precisely for that reason. They have several different levels of sophistication in its reporting. And it's making it easier for us to see where we're at, where the spend is, and tie things together. So, we're not using anything, just using Workday.  
  
 >> Okay, great. And then another question about how you monitor and track performance and alignment to strategy and objectives, specifically as it pertains to your financial performance. Does that make sense?  
  
 >> Yeah, once again, the bulk of that is done through Workday, but our state of implementation of Workday does not give us a way to align numbers with strategy. Somebody has to take a report out of Workday and put the numbers into a PowerPoint and make a presentation. Now a more sophisticated use than we have using a planning module, one could put things like the number of student, number of faculty and staff and admin in there and track those. We're not at that level of sophistication with Workday. And I've rarely been at an organization that seems to be able to get to that level with their ERP systems. That's the reason we put together the five-year model in a spread sheet because it's very on the ground, very kind of in the, you know, in the face of myself and my staff about, okay, this is what we're targeting, supporting this many student, this many faculty, and this many adjuncts this year and going forward so we can spend accordingly. In terms of execution against, I guess what I would call I.T. strategies, not done in this spread sheet, done outside of this spread sheet. And we actually take a very old-fashioned way of doing that. We have an eight-foot tall, 16-foot wide white board wall and covered with sticky notes. If we achieve our goal, we take the notes off the board and stick them in a basket, and at the end of the year, we burn them in celebration that we succeeded. And it's pretty primitive, but once again, it keeps it in front of everybody, this is what we're trying to do. So, I have an extraordinary staff here. In the last three years, our networking department tripled the wireless capacity, quadrupled the internet band width and doubled the network resilience at half the cost of doing an out-and-out replacement for everything else that was there. They couldn't have done that without support from the CFO and a five-year plan. What the five-year plan gave, okay, if you do this, this, and this, that's where we're going to be in three years, and I can see the value of it. Rather than just I'm telling you, Bill, we have to upgrade the wireless, it's not good enough. So, and that's what I meant about the plan satisfying the staff. This five-year model allowed the CFO to fund the capital that allowed us to do those things. It was an investment even though it was half the replacement cost, some of the stuff we retired it early.  
  
 >> Okay.  
  
 >> And from my chair, how much of a persant Raj of the total cost are in technology -- much of the percentage of the total cost are in technology. And you know, we can get a return on investment of the technology cost if we invest capital to reduce operating cost, that's a decision made at the CFO level to make sure that investment is appropriate. Are we getting the return on investment and driving our cost structure the way we want to based upon our strategic objectives. While it's a model to managing technology costs, it does fit into the overall modeling of the university to say how much of a percentage of cost are technology, both capital and operating.  
  
 >> And for instance, one of the things happening before the model is the team before we had done the network replacementsers as routers or switches or access points would fail, the department would buy new ones, oh, just a couple thousands of dollar, not worth filling out the capital paper work. And that would go on and on and on and on. So that things that could have been capitalized ended up being opex expenses when you really didn't want them to be.  
  
 >> Yeah. Yeah. We also had a question about whether or not you are covering travel and training, maintenance and support. And you may have answered the maintenance and support part in here, but what about some of the other costs?  
  
 >> So one of the cases and Bill pointed this earlier on, the switching to this software as a service opex model forces us to upgrade the software and go into a continual training psych billion our staff. One of the fascinating things about higher-Ed, they're educational institutions but frequently don't educate their staff. In the first three years that I was here, I.T. actually did the budgeting for technology training and travel to technology conferences to train staff and the registrar's office, finance office, and elsewhere to get people into the mode, this is really valuable for you, you need to budget for it. And now we're shifting away from that, but the business departments have seen the value and starting to budget themselves for sending people to conferences, et cetera. The deal that we have now is that the I.T. department will pay for the conference registration because it's used to feel have it centralized to get discounts and we have visibility of who is getting trained and who is not. And the business departments have to budget for the travel and the lodging and the meals.  
  
 >> Okay. And then there's another question about how you determine your metrics like the number of people per student counts and others.  
  
 >> Some of the -- well, really I drove it by the number of students to support, tier zero or tier one help desk to support end-user, it was really based on my industry experience about how many people do I need to have on a help desk to support X number of customers. And I think that, you know, educational institutions are rather interesting in that your customers aren't just the employee, they're all the students. And you know, a 10 to 15-person help desk is what is required to support a -- in this particular model, a 2,000, 2500 body that needs help. The level twos to level ones, I think if you looked out in the industry, that's probably a pretty good number. Those are really the only numbers that were driven using formulas. The others I simply eye balled for infrastructure and the adjunct calculation is, I would say a pure calculation. If you take -- if you think that a fully loaded adjunct is teaching -- we're on a three-four load for faculty. All of the add Kim Jong-uns or full-time lecturers are on a four-four if they're working full-time for us. Frequently, in just teach one class, but you have to normalize it. And our actual faculty here are at about a .8 load from effectiveness, rather than .85. So that's actual math. And if you've -- if you're running three credit course, students have to take X number of section, how many students you have, how many section, faculty at 85% ratio can cover all of those section mainedder have to be covered by adjuncts. That has embedded in it, you know, a strategy, a plan. What do we want our faculty efficiency to be? Because that will drive how many adjuncts we have which drive how many people we have to support.  
  
 >> What I was going to say is, the real key is starting off with what are the existing metrics. Currently operating your business, you have to decide on which metrics do you want to measure and manage and then do change management to say, if our metric changes by X, how does my base cost change? So you have to have conversations and discussions to say, at what point in time do we need to add a person? Or need to change the hours? So, at the university, we developed a step model ago approach to evaluate, at what point in time does our cost structure change. And I think we've really kind of embedded that in this modeling here.  
  
 >> Right.  
  
 >> And then the final people numbers down in the solution delivery area, that's very specific to this entity. We were very lucky when I arrived, very little custom software. Any organization that has more custom software than we have is going to have bigger numbers down in that solution delivery space.  
  
 >> Okay. Well, that's the questions that we have so far. So go ahead and proceed.  
  
 >> Well, I think actually that's pretty much a wrap for us. I have to figure out how to unshare the spread sheet and pop back to the slides. Stop sharing. Here we go. So, indeed. I know you can see the contact information for myself and Bill on the last slide. And if people would like to reach out to us directly, we are happy to have the conversations. And I know all of this information will be posted on the Educause website where people can download it.  
  
 >> Great. Yeah, just a reminder everyone that the spread sheet is there in the lower left-hand corner, all you have to do is just click on that and download it. We will go ahead and wrap up and thank you both for joining us today. And it was actually one that was requested through one of our listeners, so really appreciate you engaging there and giving us a chance to engage you here in front of our audience. Before you sign off today, please click on the session evaluation link-which you will find in the bottom left corner of your screen. Your comments are very important to us. The session's recording and presentation slides will be posted to the EDUCAUSE Live! website. Please feel free to share it with your colleagues. And finally, please join us for the upcoming ELI webinar on Tuesday, June 4 at 1:00pm ET Assessment for Learning Improvement: Comparing Two Universities' Approaches to Reveal Key Principles and Strategies. Thank you very much for joining us today.

**[End of Webinar]**