Bardic Systems Webinar

Host	Host, Alex Jackl, CEO Bardic Systems
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Description	Alex Jackl and 2 prominent education panelists discuss key considerations related to 1-to-1 Computing.
Companion Documents	http://bardicsystems.com/event Includes links to Show Notes, and Slide Deck, which also provides information on all of the panelists.
Panelists	Cable Dill, Business Development, Bardic Systems, Inc Steve Smith, CIO/CTO, Cambridge Public Schools Greg Nadeau, Manager, Public Consulting Group

Alex: Okay, we are recording this event so if you do not wish to be recorded, don't speak up.

If you send a chat to us or ask us a question, we will then relay that anonymously, but otherwise know that if you speak you will be recorded and we will be compiling this into our list of our ten-session webinar series so it will be available to people. Just know that if you are going to be speaking. We'll be starting in one minute. We're waiting for one more of our presenters to join.

[00:01:00] Okay, good afternoon. Greg, can you say something so that we know we can hear you?

Greg: Guess I had a little hard time getting in but I arrived.

Alex: Excellent, thank you. Steve, can you just say something so we know we can here you? Steve?

Steve: Yeah?

Alex: Very good. All right, yep we can hear you now.

Steve: Okay, great.

Alex: [00:02:00] Fantastic. This webinar is designed to act as a part of a series of webinars designed to take data-intense or technology-intense topics or subject areas and make them available in a way that makes sense to people who are making management, budgetary, and educational decisions for organizations like state education agencies or districts. This will be recorded, so if you say anything you will be recorded. Please note that. If you have any questions during the course of this webinar, please you can either chat or you can add a question to the Q&A section as you will. I'm going to unmute people just to make sure people can speak. I'm now unmuting. Can people say something just so we [00:03:00] know we can hear people? How about Steve? Steve Setzer? No. Jim Campbell, can you say something?

Jim: Yeah, this is Jim.

Alex: Okay, great. That looks like that's working. I will keep it muted for now and then I'll unmute as we get to questions. This is not designed to be a very formal conversation. This is designed to be informative and to be more in the line of an inquiry, so myself and the panelists will engage with each other and we appreciate all of you engaging as well. Feel free to interact with this as an open discussion rather than as a structured set of talking points from myself or any of the panelists.

[00:04:00] Let's begin. Our agenda is we're going to have welcome and introductions and then I'm going to have Greg Nadeau actually kick off on the topic of what is one-to-one computing? We struggled a bit in designing this as to how much time we spend on the why and the what is one-to-one computing and how much to spend on the question of how to execute. We'll talk about that a little bit in that section and then we'll cover some core topics that need to be covered if you're executing a one-to-one computing initiative, and then we'll have an open discussion on all those topics.

Let's begin. I'll kick off by introducing people. Myself, My name's Alex Jackl. I'm the Chief Executive Officer of Bardic Systems. Working with me is my business development
[00:05:00] person, Cable Dill and we have two panelists besides myself and Cable, Greg Nadeau who is a manager in Public Consulting Group, and I'll let Greg introduce himself when he begins speaking, and we have Steve Smith who is the Chief Information Officer of the Cambridge Public Schools. I'll have Steve introduce himself as well when he begins speaking.

With regard to one-to-one computing, I'm going to start with a rough answer to the question of what is one-to-one computing? Then we can open that up a little bit. Some people would define it as an age or grade level appropriate device or devices for each student. It's focused on student-centric learning rather than more traditional sage on the stage, classroom based learning. It usually involves a focus around digital assessment, either a formative or high-stakes kind of assessment centered on
[00:06:00] evaluation of students' progress, and it is a technological side effect, if you will, of various pedagogical trends like project-based learning, competency-based education, blended learning, flipped classrooms, and giving students particular access to appropriate open educational resources and digital content. This one-to-one computing can be about either organization-supplied devices or bring your own device. It's not always truly one-to-one. Sometimes one learner has many devices and any initiative around one-to-one computing has to decide what scope and audience is actually interacting.

Next I want to talk about what does it mean? I want to open it up to have Greg take
[00:07:00] over this part of the conversation for the next 10 or 15 minutes. I may interact, and I invite any of you who are participating to interact as well. Please, Greg, if you'd like to start discussing this, that would be fantastic.

Greg: Okay. Hi, everyone. I know some of you and it's good to see or talk to your guys. I definitely encourage this to be a discussion. I don't consider myself as more of an expert than many of you on these emerging issues, but I'm happy to contribute my ideas.

What is one-to-one? I think we're talking really about a trend of personal learning devices that has been accelerated through the drop in price down below $300 and in
[00:08:00] many cases below $200 for an appropriate learning device for students. That is making the economics of one-to-one computing very enticing for school districts. To think about it as $250 for a device, and if you assume the devices lasts two years, that's $125 a year, the average US expenditure on K-12 education is $12,500 a year so we're talking about 1% of the US K-12 budget in order for every kid to have a device that gets replaced every 2 years. Now, when you add in a lot of the free applications and content that are now available, you're talking about a tremendous value proposition that we haven't seen before.

[00:09:00] Can you go to the next slide? I think of this very much as one-to-one really being a piece of the puzzle, a symptom, but the underlying or overarching idea is what I would call blended learning, and that itself really for me is 3 big trends happening, each of which is really a spectrum in its own. What we know is that there is this push towards digital

devices for all the reasons I just said, that one-to-one becomes more cost effective, that enables online distance, a whole bunch of things to happen. It would be false to say that we're going into a full digital learning because there will also be plenty of opportunities for physical learning. Books, real classrooms, all of those things will continue. Really when we say digital we mean we're moving from pretty much a purely physical to a blend of physical and digital.

[00:10:00] I would argue that 2 other trends are of equal importance now. Again, the trend that is towards a blend of what has traditionally been group-based social learning into what we might now call personalized learning. Not that I believe we are going to end up with purely personalized, but we will now see a blend of social and personalized in a way that we've seen traditionally just group-based in the past, or predominantly.

Then finally this top left trend which is again not fully moving to competency-based education, but a blend where there's some amount of traditional letter grade assessment policies, and then increasingly more and more mastery-based progressions.
[00:11:00] That could be more move on when ready and really breaking up courses up into their constituent skills.

When I talked to Alex about this, I immediately went to the why. What are we going to do with these devices? It seems like in my own school district the previous superintendent would often say that the early districts that did one-to-one in Massachusetts had a very bad track record of student growth scores. His conclusion was one-to-ones don't work. They're a waste of time, they're a distraction. I think that that's not true, but I do think that we could all agree that simply putting well-connected devices into schools without any sense of how they're going to be used in order to improve core academic English and math instruction as well as the other subjects is probably not going to be effective either.

You have to have a sense of how is the English teacher going to use these devices? How
[00:12:00] is the math teacher going to use these devices? Are kids going to take these devices home? What is the relationship between what they used to do in homework and what they will do in homework? What happens when you're able to do things? Khan Academy, TenMarks, ALEKS, those types of learning tools that you break down the barrier between assessment and instruction and in doing the task you are producing a stream of diagnostic assessment information that enables true differentiation. If you know that some kids, based on their homework, if you just say said did Khan Academy for all the kids on their one-to-one devices for math homework and you know now that some kids are a couple hundred skills ahead of some other kids in the group, doesn't make any sense to teach those kids all the same thing tomorrow. Don't you start thinking about the school day differently? All of those questions. If you don't address those issues, then it's my belief that no amount of network planning or security or any
[00:13:00] of those other topics is going to be able to ever be really grounded in solving a problem.

We need to start with how is the English going to use these devices? How is the math teacher going to use these devices? How are other teachers going to use them? How are students going to use them? What are the patterns that we predict? What is the

schedule? What are the uses? Then we can get to the other issues at hand.

Alex: Greg, I have a question about that for myself, in that I agree with you. That is the direction and we need to know that, but I think a lot of districts are struggling with that they have a structure in place, they have an organizational structure in place that's supportive of normal classroom environments, and then there's pressure from say the board or from the legislature or from parents that, "Oh, we need to move from 21st century kind of learning. We need to move to digital learning." How do we make the
[00:14:00] jump when in reality they're not ready? The curriculum is not redesigned. They still have contracts with publishers that have 8 years left to go on the clock ticking. How do we handle that transition-ary period where we're not in an ideal place and where we have to start moving towards that, but we don't have all the answers to the question of the curriculum? How are we going to do the pedagogy and how ... That's not formed yet, but technology decisions often and data decisions about design of interfaces need to be worked out in a scale of years, whereas we may not have the pedagogical or curricular information yet. What do you think about that, Greg? How do we attack that problem?

Greg: It may take years for us to understand the full impact on curriculum and teaching and learning structures, but that doesn't mean we can't start that journey today. Again, I
[00:15:00] would say that if you as a school district are not beginning to think through those ideas, developing some type of a digital learning blueprint or something that integrates those ideas together, then I think you're wasting your money. It will be that case where you have these devices that don't actually get used effectively. Now the kids, they know. They automatically start using these devices to do things that kids will do, sometimes good, sometimes bad. It is true that simply putting these powerful devices into kids' hands will have an impact on them.

Interestingly my 6th grade son is in a Chromebook pilot at the Healey School in Somerville, Massachusetts here. I was interviewing him and 2 of the other kids I carpool with on the way to school. I said, "Hey, you're going to get Chromebooks in your grade in this pilot." I said to them, "I hear the superintendent doesn't want you to be able to
[00:16:00] take them home, that they're just going to be for use in school." Immediately all 3 of them said, "Yeah, you shouldn't let kids take them home. You can't trust kids." I said, "Really?"

Here in Somerville we have this great string program. There are hundreds of kids across the district who have violins and cellos and things that are much more expensive and fragile than a Chromebook. How come we can trust them for that and we can't trust them with a Chromebook? Furthermore, many kids now have smartphones that are more powerful computers than a Chromebook and have more resale value since you can just shut off the Chromebook and make it into a paperweight if it got stolen. Why can't we trust kids with Chromebooks? The answer is they haven't experienced it before. That's my district. Many districts are further along than that and they get over that hump pretty quickly. I went off on a little bit of a tangent.

Alex: No, that was good actually. I think that's good. That's one of the fundamental questions
[00:17:00] we have to deal with. Steve as a district CIO, is anyone on the audience, any thoughts on

this before we move on?

Steve: Can you hear me, Alex?

Alex: I can hear you, Steve, yeah.

Steve: I think the only thing I have to add is that it doesn't all have to be at once, right? There's no right way to do this. There's so many moving parts to this as we're going to get further into the presentation here about infrastructure and decisions to make and tying it to the curriculum and selecting the right device, that oftentimes, at least myself, I would find myself trying to figure out this complex plan to get from here to here where it doesn't necessarily have to be designed from end to end. I've been here in Cambridge
[00:18:00] for 8 years now and in the beginning the first steps were to build the infrastructure regardless of what we do at the end and be flexible. I'm just trying to say there's many different ways to work towards one-to-one and you don't have to solve all these problems up front and make all these decisions up front.

Alex: Okay, great. Good. We'll be returning to this topic I'm sure as we go through the various components, but we're going to move on now to discuss some of the core execution topics to cover. This is now focused less on the why and what for of the one-to-one computing, but more on the, "Okay, once you've decided to, what are the kinds of questions you need to ask?" In particular this is about framing questions. We're not going to cover every detail. There's a lot of complexity, as Steve alluded to. There's a lot
[00:19:00] of complexity here. This is only the tip of the iceberg, but what this is an attempt to do is frame a set of taxonomy if you will of areas to ask questions in and types of questions that will give you the ability to create bridges between the management, the planners, the people who are doing the budget, the CFOs, and the technical and data people that are actually executing some of these plans.

The core execution topics we're going to look at is network infrastructure, the device infrastructure so to speak, what devices you have and what devices you use in your approach to that, your data, and what is the data structures that support the initiative. What kind of application and content is going to be used and why are you having a one-
[00:20:00] to-one and what kind of application and services and content will be available to learners in the future? Then talking about 2 critical topics that are so often underestimated. It's the training and the sustainability to make it work, and then the privacy and security aspects as you begin to execute these one-to-one initiatives.

Before I go on, is there any large topic area that is not covered by this that you think should be a pivotal piece of the conversation that we did not address or mention here?

Okay, great. Let's talk about network infrastructure. The network infrastructure is critical to one-to-one computing environment obviously because you have to handle the
[00:21:00] connectivity between the internet and the local servers through to the devices in the classroom and possibly in the home. One of the things that often happens in a lot of districts is people say, "Okay, we're going to add Wi-Fi to the classrooms." One of the questions you need to know to ask, how many access points you have and the number

of devices that can be handled by each access point. How much Wi-Fi presence there is and the density of coverage of that. If you ask those questions, then at the very least the technical people, the network people on your teams can actually begin to give you answers that are actually manipulate-able in a quantitative way.

Why those 3 questions are important is because you have to decide on scope of coverage. I was working in a district where one of the school board members was very
[00:22:00] upset because kids that were in one of the non-classrooms of the building did not have enough Wi-Fi access to actually do their work. When the school principal was asked about it, he said, "No, we wired all the classrooms where kids are in class for Wi-Fi," and that was what was in the building plan and that's what happened, but the expectation of others was that if they were in study hall and they're not in a classroom or they were in the cafeteria, they could whip open their device and still do all the work they were doing. That's not how the Wi-Fi was set up. Scope of coverage and typically that question of classroom versus school building, however many, many districts are starting to do ambitious plans to have their entire campus have sufficient density and sufficient
[00:23:00] presence of Wi-Fi that the kids can sit on the lawn outside the school building and actually do their work.

Some districts are actually working with community leaders and local businesses and starting to have conversations with the local government, the mayor's offices, and some of that on building neighborhood and community coverage. For most districts that's very far away, however there are a lot of districts that are actually now starting to engage in those kind of questions.

The other question is as cost starts to come into it and people start saying, "We can only afford X, Y, Z," one of the things people then go, "Well, we really only need this for SBACs or PAR, or we're doing this testing in our district and so we need those kids to have network access." Is it sufficient to have only assessed students as scope. Frankly I can understand having to do a partial roll out of network capability as you can afford it,
[00:24:00] and maybe the first students you would do would be the students you're going to assess, but you have to be very careful that if you only do the students that are being assessed in the classrooms where there are assessments happening, your ability to actually leverage that for a full scope of what people are talking about using blended learning and one-to-one computing for will be vastly reduced.

The second thing is grade. We see a lot of people, "Our high schools are all wired but we haven't wired our elementary." Or, "We've got grades 3 through 12 because we're assessing grades 3 through 12, but 1 and 2 don't have it." You want to look at do you want to use grade as scope, or does it make sense to have your 1st graders also have device capability as well? Again, that leads back to one of the things Greg brought up which is what are you doing this for? Do you have a pedagogy where you can start to
[00:25:00] support 1st graders in utilizing devices and does one-to-one computing start right away at even K or at 1st grade?

Before I move on to the next topic, any questions or comments either from our panelists or anyone who is on the webinar?

Greg: I want to hear from Jim Campbell and from John Brandt out there, some of the other participants joining in the discussion.

Jim: This is Jim. I'll just make one quick comment. I was going to add it into perhaps the device section but I think it's also relevant here. I think it maybe goes without saying, but I'm going to say it anyway. One of the things in our work with the Race to the Top
[00:26:00] district grant program out of the Department of Education which is funded to support districts in the development of personalized learning environments, most if not all of those implementations have some level of one-to-one and certainly many of them started from that place.

One of the things that I would say in terms of anyone that's looking at this or moving this direction is to reach out to those in the field who have already progressed down that path, and that's a growing number, to learn some of the lessons learned from them. In fact as we were talking about the network itself specifically and access points, et cetera, I know that for example Miami, who's one of the Race to the Top district grantees experienced a significant challenge as they went to implement their personalized learning environment with their network and their bandwidth capabilities and have lots of good lessons learned there, as well as others who rolled out one-to-one devices and then had to call them back or change their technology solutions or change
[00:27:00] some of their policies based on what was happening with the implementation.

That may be the one point that I would add and it's probably relevant across all of these core areas is the interaction and the reaching out to others in the field who have walked this road ahead of us.

Alex: Okay that's great. Thank you, Jim. Anyone else? Okay. The device infrastructure, this is really about what kind of devices are we talking about? What kind of physical infrastructure do you need? The first one is obviously what kind of device, are you talking about laptops or tablets or even phones? What we've seen typically is that in the early grades, K through 3 or so, it's very common to see tablets as the device of
[00:28:00] preference. Grade 4 and on you start to see laptops, Chromebooks. That partially has to do with at grade 4 and on you're starting to get much more heavy on writing and laptops ... Some people argue with this, but most people assert that laptops are better for when you're doing writing and those kind of assignments and are therefore better for once you start hitting grades where that becomes a core part of what the student is doing with the device.

Charging stations. If you are going to have laptops or tablets or things that use power, you either need to have plugs everywhere, which most classrooms in the United States don't have enough of for these kind of uses, or you need to have charging stations
[00:29:00] where you can charge the devices. When you're thinking of the cost of devices, you want to ask yourself ... There has to be some ratio where for every 30 Chromebooks you buy, for instance, you might need to actually buy a charging station or something like that. That's not the exact, but you need to think about what is the physical infrastructure that is required to support these devices once you've bought a device?

Because a device by itself may need some things. Charging stations, power. We'll talk about support and sustainability in a little bit.

The other thing is some schools, Greg mentioned this in Somerville, they orient it around things stay in the classroom. The computer belongs to the classroom and then
[00:30:00] the student uses it while they're in the classroom. Others have the student take the device home. It becomes the device for the student. Some are doing the half and half hybrid, where those students that need a laptop to take home can check it out from the classroom where there's some kind of checkout process. I've seen all 3 of those models.

I agree with Greg's assertion he made that frankly kids that are at a certain age level, I'm not sure about kindergarten, but kids at a certain age level, they're capable of handling a device or a Chromebook and having it just like a textbook. That's a thing you will have to decide when you're actually doing a one-to-one computing. Which of these models are you going to do it? Each of them has their own overhead that comes along with them. You need a checkout process and a way to manage the devices that are checked out. If
[00:31:00] it's take home, you need to make sure which computers are assigned to which kid, and if there's connectivity problems in the home, if there's anything you can do about that or intend to do about that. If it's classroom based, how do you make time so that kids that need to use the computers can still use them when they need to get home at some point? Make sure there's enough computer time for each kid.

Another issue is some districts-

Greg: Alex?

Alex: Please go ahead, Greg.

Greg: Interestingly back to carpooling with my kids, the other thing that they said is, "We don't want to carry Chromebooks home," because these 3 particular kids are fortunate to have dedicated laptops themselves at home, and so their reaction is, "Why would I want to carry a device home when I already have a device at home?" Conversely, as you said
[00:32:00] some kids, if they go home with a browser-oriented device like a Chromebook and they don't have the connectivity at home, then that's not a real solution to them. We also need to be serious that it's not just a connectivity issue. It's a safe and secure and appropriate homework environment for them as well to use the tool. I do think that some type of hybrid is what's necessary.

When you think about in Boston we have the Hubway shared bike system. That's what we really need is that schools and community centers keep enough Chromebooks that you can go with your student ID and grab one, check it out, use it onsite, take it to your home if you want to, bring it back. You don't necessarily need to carry it, it might be sort of like a Hubway. You just go to the next site and you just pick one up there, log in and
[00:33:00] all your stuff's there as well. I think that one of the things they need to think about is that in some ways one-to-one again isn't really the right question because probably you should be planning on 110% or something like that of devices per kid because you want to have some spares that you can throw the broken one in a pile and grab another one,

log in, and have it be yours. Not to mention the fact that it's bring your own technology. The smartphone itself provides an acceptable place to do some type of short answer exit ticket type Google form assessments and things.

Alex: Nope, those are all kinds of questions [inaudible 00:33:40] You talked about the smartphone. When people talk about bringing your own device, the technology is ... This is one of the things that Greg has said before about eventually the technology should
[00:34:00] fade into the background and it should only be the instructional and curricular and pedagogical concerns that drive it. The truth is we're not there yet. It really matters. There are some things you can do on a smartphone right now, and depending on which smartphone you have, certain applications will behave or they won't behave. If you're going to have people bringing their own devices and using that as part of your curriculum and as part of your program, you have to know what standards are you applying this. What is the minimum acceptable value where a kid's Samsung Galaxy counts as their device for purposes where you might be using it for actual instructional and curriculum and assessment matters? There's pros and cons that you have to think through at each point.

I want to reiterate what Jim said, which is people have struggled with this now for a few years. There are people that have both horrendous failure stories that you can learn
[00:35:00] from and some great success stories you can learn from. That's an important thing.

The other piece is what the intended device usage is. If they're just using it for testing, assessment backstage you're going to do common core testing and that's what you're using the device for, that will drive what kind of devices and what kind of model you use.

Greg: Isn't that kind of ridiculous though? You would never in any other environment buy a device for 1% of your time. That doesn't even make any sense to buy a device that's just for a once a year summit of assessment.

Alex: Call people, I invite people on the call to weigh in on this, but my experience is there are, I don't know if I would say a lot, but there are absolutely districts out there that are
[00:36:00] actually spending money and have initiated projects whose sole goal is to get devices in front of the kids for the purposes of the testing. That's the whole purpose of that money being spent. Can that be repurposed? Yes. Will it be repurposed? To a certain extent. That is definitely happening out there. I don't know what other peoples' experiences on the call. Tom talks about that. I know some of you have a lot of experience like Jim and Tom and Steve. I don't know if any of you have a thought on that, but people are doing it. Even though I agree with you, Greg, I'm not sure how wise it is, but it's happening. Hence why the question is important. Are you really doing it just for that or do you intend to have adaptive testing or do you intend to support some kind of model?

That leads to content support because if you have a particular LMS, if you have
[00:37:00] Blackboard or Desire2Learn or you have some kind of Moodle thing or you have some kind of LMS and a particular SIS, you need to make sure that if your intention is that that application is used on these devices, you need to know that the devices support the

intended content.

One district I was working in bought a bunch of iPads and they did one level of depth. They actually asked, "Wait, does this support Flash?" The vendor that sold them the iPads was like, "Yes, it supports Flash." It turns out that the application that was in use across the entire district used Dynamic Flash which the iPad did not support. Essentially then all of a sudden they had to make a decision, "Do we get rid of the iPads? Do we get rid of this application that's embedded now in our pedagogy and curriculum?" It's
[00:38:00] important to have the people that are managing your applications and the procurement people and the people making decisions on what kind of devices you use, those people all have to be talking at a fairly deep level before you make the decision on devices.

Another example of a question that's a little less dramatic than that, because that one's pretty good. If it can't support the content that you're serving up for your pedagogy, then you shouldn't bother doing it or you need to shift something. Also how much local storage versus network storage do the intended applications require? Do you need to download applications? Do they need to run on a Windows environment or an Apple iOS environment, or can the thing be done completely on the cloud and you're just accessing through a Chromebook or a browser? Those are important questions because if you have committed to a particular application that requires local storage and a
[00:39:00] particular type of operating system, you need to have that inform your device selection.

Any other questions about device infrastructure or that area of ...

Steve: Alex, this is Steve. There is one area of consideration that I think needs to be pointed out. That's the management of the devices. It's often overlooked. A school that has moved down the path to one-to-one ends up with a few hundred iPads and no way to manage them. Depending on what devices you have, the number of devices, and the mobile device management solutions can be fairly expensive and complex. Obviously Chromebooks, it's built into the Chrome Google Apps for Education management as
[00:40:00] long as you enroll the Chromebooks, but all the other devices under consideration, the iPads or Android tablets or laptops of either flavor, when you start having large numbers of them in the schools, you really need to have a remote management tool not only for just the traditional updating and management of the devices, but in a one-to-one where especially if the devices are being shared, you want to be able to manage the applications on the devices based upon the logins and hopefully tied into either your student information system or your authentication backbone so that it's automated and you're not manually loading applications onto individual student devices. Makes good sense, right?

[00:41:00]

Alex: Yeah, that makes very good sense. I'm making a note of that and I'll definitely include that in a PowerPoint when we publish this out. That's really good, Steve. Thank you.

All right, next. Data infrastructure. Now, this one's hard because people collapse data and technology all the time and they're actually quite separate and often the people accountable for those 2 things are sometimes the same, and sometimes your

technology director of your district is the person who's accountable or the person in your college or the person ... There's one person who's accountable for both, but often they're also different. The data stewards for data are often not the same people who are the technology people and the skill set is different. If you're asking technology people data questions, often they are going to give you not great answers and vice versa.

[00:42:00] Some of the data issues are single sign on issues. If your students already have district user names and logins that have to be supported, some applications that are going to be used in a one-to-one computing program, they insist that you have to use their user names. That's something you need to know before you purchase applications. Are you going to insist on that? Are they going to be willing to integrate with whatever particular standard you're using, whether it's OpenID Connect or OLAP or you're insisting that everything connect through Google Apps for Education. That needs to be established in part of your vendor outreach.

Whenever you put a RFP out or you talk to a vendor or a teacher's looking at downloading an app, you need to make sure that if that application or that service that you're going to be using on the devices that students are in front of, that they can
[00:43:00] actually integrate with the authentication and authorization and access standards and policies that your district has taken on. This will be relevant both to application content integration but also to the privacy and security conversation that Steve is going to speak to. We'll get to that aspect shortly.

The other thing is a basic thing on data dictionary. This is one of those things where everyone thinks they have a data dictionary and many people do have some form of either an Excel spreadsheet or a database that has definitions of things, but you need to know what are the minimum data structures and interface types that you need for any new applications that the one-to-one computing device will require. That might be a question of rostering. We pull out roster here distinctly. How do apps get the basic
[00:44:00] student demographics and the classroom info? Rosters and basic teacher demographics. That should not be a one-off because otherwise your technical staff will go crazy, or your teachers will hand type in PII (Personally Identifiable Information) directly into these third party apps because they don't have any other option. This is an important part of the application management of how does data get in and out of these new applications that the one-to-one computing environment calls for.

The last piece, and then I'll open it up for comments, is connectivity to the student information system and to the learning management system that you use in your district, whatever it is. The questions you want to know is does the co-application follow some basic connectivity standards? Either SIS infrastructure or usually student
[00:45:00] information systems, LTI infrastructure for LMSs. Is it using CES definitions of things or is it using some other proprietary definitions? All of those things will make an application integration either much more costly and longer or quicker and cheaper depending the degree to which that's clarified right at the beginning and so you can at least walk in with your eyes open. "Okay, we're going to have to spend a couple of weeks or a couple of months integrating the date because they use completely different definitions," or

something like that.

Any questions on this data environment piece?

John: Alex? This is John Brandt. Hello?

Alex: Yeah, John. Go ahead, John.

John: [00:46:00] Although the data infrastructure discussion is of great technical interest to me and there's a lot we need to circle back on in regards to data infrastructure, I feel like I need to back up a step and offer an opinion or 2 about hardware infrastructure. That was an interesting discussion. I wasn't able to jump into that, our device infrastructures you have labeled there. Here's my opinion. I know this is open to argument or discussion, but I believe that the only way to make one-to-one computing economically feasible and manageable, is using a Chrome-type or browser-based device and all applications, whether they are content, assessment, record keeping, IMS, absolutely have to be cloud-based. I don't believe a school or district of any size would survive otherwise, and everybody gets one. I appreciate the fact that kids in better socioeconomic situations [00:47:00] will have their own devices. A Chromebook or something like it is smaller than the textbook. No one ever complains about carrying around a backpack that looks like they're upwards to 20 pounds these days. One more device isn't going to break anybody.

Finally my third point here. I think that every district that has a diverse socioeconomic mix of students needs to ensure that those students, when they are using the device outside of school hours, has access to some type of robust broadband or reasonably robust broadband. That may be at the home, and if it isn't at the home I believe the schools have to be able to identify and help provide access, either through a community [00:48:00] library or do something novel like keeping schools open after normal hours and make it more of a learning center rather than a school that just runs on a bell schedule.

Just to review, I'm just throwing this out. I know there's a lot of discussion. I don't want to sound too insistent on my ideas, or I don't want to sound pandemic here, but Chromebooks, everyone gets one and guaranteed broadband in some way.

Alex: Thoughts on that? Greg? Steve? Anyone else on the call?

Greg: I agree with John, Steve. You're more on the ground with the reality of the situation where maybe you can't get all Chromebooks all at once and you've got older devices and a mix, et cetera, so it might not be so simple. In principle I agree with what John's saying.

Steve: I agree completely. That's really the direction we're going.

[00:49:00]
John: Yeah, I think the pragmatics of it lead to that being that has to be what happens eventually, I think.

Alex: Yeah, that's very good. All right that's great, John. Thank you for that.

Steve: Page coming up, Alex.

Alex: If you can't break in because we're talking too much, feel free to use chat or QA to notify us that you want to say something. Okay, so let me move on. Application content integration. We've touched on some of this, but the one-to-one computing environment calls for using a whole suite of digital resources and tools that some of the teachers are not familiar with, have not used a lot of. That will have to be ... There's a whole set of things to manage about that. There's content standards for either assessment, LRMI for tagging content, the Common Cartridge which is in learning management systems one
[00:50:00] way to move lesson plans back and forth. There's presentation standards. Do you insist that everything is HTML5? You must be able to support Flash or something like that. There is the issue with all of these, by the way, is that as devices and technology keeps accelerating forward, the risk of things becoming outdated is always there and so you have to always have a refresh model and a sustainability model, we'll talk about that in a second, to make sure these decisions stay current.

Also you need a server. John talked about having everything being cloud-based, but do you need a local server? Are you doing Citrix kind of stuff or is it web-based, or is it really local to the device? I know there's a lot of kids' educational programs that are really good applications that still require you to download the software to the kid's
[00:51:00] device. I think that's slowly going away because as it becomes harder and harder to support the massive heterogeneous device environment, and so cloud-based is definitely I think the way all that's moving, but right now a massive amount of educational material still needs to be downloaded to devices.

The second piece of that is SLAs. You need to ask for a service level agreement. If you are going to the cloud, do all of your application providers have service level agreements that meet your district's educational needs? What's their up time? What's their availability? If all your kids log in at the same time, is it going to crash? Just little things like that need to be taken into account. You can't just assume because you're buying a "cloud-based product" that it has the scalability of Netflix. It may not, and probably
[00:52:00] doesn't actually. Then of course privacy and security. If kids are logging in to applications and services and content providers, they're probably giving a lot of information to those content providers and so hence privacy becomes very important. Steve will address that in a second.

Then username and login, which we already talked about. Does this application require you to use their rules for usernames and logins, or are they going to use your rules, integrate with whatever your authentication environment is? You may not have an authentication environment. That may not be a policy that's really worked out in your district, in which case you need to do that. I think there's no escaping that.

Any questions about application or content integration or comments?

Greg: [00:53:00] Yeah, I think ... You probably didn't list as a topic, but should have been on the list is intellectual property. Really as you go from textbooks to digital resources ... There's a recent study that just said that 73% of teachers get more of their content now from free so-called open education resources than they do from proprietary content sources. That creates its own host of issues as well. I think where I'm certainly focused these days is a lot about content integration and less about traditional student data stuff that goes from the districts up to the EDFacts and SIS and all of those worlds, and more about how are we actually replacing the previous physical content, previous proprietary content with open content? What I think we find is that open/free, as you said some things you [00:54:00] need to download but there's so much that's already cloud-based, opened, free, and it's growing. To just focus on those things that are open and free already provides more than you can need.

I was just on my high school son's robotics team and they were going to use this expensive CAD software that they were going to buy and download on the laptop. Then, "Oops, wait. Here's a free browser-based version of the CAD software that will run our milling machine as well." Things are changing so rapidly like that now.

Alex: [00:55:00] That's great. All right, excellent. Anything else? All right, let's talk about training. I'm going to go quick on this, which I hate to do because this is a great topic and it's an important one. Steve talked about device management, refresh policies, and a budget for maintaining devices, software, and the network. You need to also handle training people in the one-to-one computing initiative. Whatever pedagogy or changes in organization or classroom behavior that you're designing in, that has to be trained somehow and you almost certainly have to have a building, a district champion, and you need to have a way for people to reference that and go back and have frequently asked questions and quick easy reference guides and how to learn more. You'll need some kind of help desk.

To speak to the point that John Brandt made, you may need more than your traditional [00:56:00] classroom hours. I don't know if you need 24-7, but you may need to have 12-6. Teachers may be doing their lesson plan work in the evening when they're at home. Students will be on their computers possibly interfacing with content, taking assessments, doing classroom work, actually doing Khan Academy, using their applications at 7:00 at night, 8:00 at night. You have to have set up that you might need to have some kind of help desk support and look at what level of support your teachers and students are going to need, given the new way of doing things. You need to manage the dirty details, like renewal agreements with providers, refresh policy. Also you have to budget in annual professional development on using and integrating these [00:57:00] technology tools in the classroom. If you don't do that, you might end up with a bunch of paperweights in the classroom and teachers doing things not using the new structures.

Anything about that before we go to privacy and security?

Steve: Just one thing, Alex. I would throw all this into one category along with some of the other things we talked about is building the capacity that you need to support a one-to-

one program, whether it's a technical capacity or the budget capacity or other resources, especially staff. For example having both technical and integration support in each of the schools for the staff. I think it's really important that you build the capacity starting with the infrastructure and then the people and the budget, and then put the devices in. Otherwise if you're trying to catch up with your capacity, you'll run into issues.

Alex: Yeah, that's really good, Steve.

[00:58:00]
Greg: I would add that in the say way as we think about student learning, we should think about professional learning. We should move toward some optimized blend that is not instructor-led or on demand, it's a combination. You can think about organizational change in management perhaps as a process where there's some on demand training resources that teachers can access whenever they want, and then they're encouraged to do some of that on their own and then some onsite facilitator-led catalyst just to get peoples' focus, attention, motivation. Then some ongoing perhaps not onsite distance learning, but still facilitate it, follow up where teachers are doing work together in
[00:59:00] professional learning communities and perhaps submitting work back to facilitator experts who are providing feedback on typically as to how they are continuously working on their curriculum and incorporating new practices. Same thing, that they need a blend of training approaches.

Alex: That's really good. I think that's good. I think we need to ... Definitely that's very pivotal and I think that's probably maybe worthy of another slide as well. Okay, that's great. Steve, do you want to talk about privacy and security? We won't be able to click through the links you had, Steve, in here but I do have those pulled up and I can share them if you want to show any of the links that you put in.

[01:00:00]
Steve: Okay, great. I'm sure everyone on the call is aware of how privacy has become a topic that we hear about a lot in K-12 education in the last couple years. Everything we've talked about so far in this presentation, you could easily put a layer of privacy concerns into the decision points that you're making on any of those, whether it's the device software, the network. The main point I want to get across as we go through these is that as the leader in implementing one-to-one, and even without one-to-one, I think we all have a responsibility to look at what we're putting in place through the privacy lens and ensure that we are taking whatever measures we can to protect student privacy.
[01:01:00] Many times it gets complicated. Over the years, to be quite honest, there's still a lot ... Because it is complicated and takes time and effort, many schools aren't necessarily taking all the best precautions.

Here are just some of the things in particular thinking about a one-to-one program that come to mind. The first one is the actual mobile device security. Depending on what device is being used, as a couple of the examples that were given earlier, there is student data living on those devices. We need to think about how we're protecting that data, whether it's encrypted on the device, and if the device is lost are we able to wipe

out the device and ensure that no one can access that student level data? Again that
[01:02:00] gets back to the mobile device management idea earlier, ensuring you have the right tools in place, not only for the other management issues I brought up but being able to secure that device and take control of it, because they are mobile and they will get lost and they will get left on buses or whatever.

Similarly in the BYOT or BYOD situation, it gets a little more complex. If we are enabling student level data on personal devices or loading school supported and owned applications on personal devices, how do we still ensure the protection of that student level data? Again, there's mobile device management tools that will allow segmentation of these mobile devices to ensure that you have control over that student level data.

[01:03:00] The device monitoring and transparency, this was highlighted. We don't have to go there, Alex, but there was a recent Massachusetts ACLU report around privacy that highlighted school-owned devices that were going home with students that still had monitoring software on there. Some actually had monitoring software. Another very simple example that is probably happening in many places is Chromebooks that are going home being managed by the Google Apps for Education management platform and having bookmarks being turned on to follow the user. If the student is taking the Chromebook home and is using it for personal use, the school is unintentionally tracking the student's personal use when they're at home.

[01:04:00] There's many little nuances to the privacy issue. Probably one of the hardest issues to deal with as a district is getting a handle on all the potential what I would call student data leakage. Throughout our whole presentation just now, we're talking about all the online applications and moving to the cloud and how they can enhance the teaching and learning in their great applications. Some of those are core applications that have been around the district for a while or we are contracting with through a central system and already putting perhaps procurement contracts in place. Others are perhaps free
[01:05:00] applications that teachers who are being empowered rightfully so to explore and find these great new applications are sometimes just downloading them and beginning to use them at no fault of their own, but without any lens for privacy. We need to think about that and think about how we can put systems in place to ensure that applications that are being used are going through some type of a vetting process to ensure that if students are interacting with an online application, whatever data they are collecting is being protected properly.

There's a lot of resources out there. CoSN has a privacy toolkit. PTAC, US Department of Education's Privacy Technical Assistance Center has a lot of information and this
[01:06:00] particular document that's brought up gives a model terms of service when entering into agreements with online providers that basically gives an outline for what our expectations as school districts should be of these online providers because the main laws that are governing this governance of data is FERPA and FERPA is putting the burden on the school district. If we are enabling these providers to obtain some sensitive student data, there are conditions around that. There's nothing alarming about it and vendors should not be alarmed about it. Things like they're not going to share the data with other parties, they're not going to resell the data, they're not going to market

to the students and things like that. Other issues that aren't quite as obvious, things like you want to be able to get your data back when the contract is over with that provider,
[01:07:00] you want to make sure you data is not being merged in with other schools' data.

Putting a system in place where you can vet all online applications to ensure that if they are collecting any data, the vendor is taking appropriate steps to protect it, can be burdensome. There are examples of ways where school districts are getting together such as the Massachusetts Student Privacy Alliance, and this is purely ad hoc district-grown effort where there's around 50 school districts that have gotten together and said, "Let's all use the same contract terms with our vendors." This is a site that was put up where these 50 districts have agreed that any interaction with online vendors is going to use the same contract terms with the idea being that every district will not
[01:08:00] have to renegotiate these terms with the vendors. Likewise the vendors won't have to renegotiate with 50 different districts. On this particular site you could go to search the database, for example ... Alex if you don't mind, or Cable, whoever's driving. If you search the database and pull up Cambridge public schools for example, you would see all the applications that we have engaged with as well as the contracts that are in place with those vendors and also now the actual data elements that are being captured or exchanged with each of those applications.

The other piece of this is trying to be as transparent as possible with our community
[01:09:00] around this data. The more transparent we are about our processes and how we're protecting student data, the more comfortable our whole community, our parents and community are, that we are taking appropriate measures to protect student data. It's not just the wild, wild West out there with teachers using these applications.

I don't know, Cable or Alex, I don't know who's driving, but could you go to the Cambridge public schools website for just a second? Great. Then click on the For Families tab.

Alex: Which one?

Steve: For Families. Top right.

Alex: Top right. Oh, yes. Okay.

Steve: Then there is a Resources tab when that comes up.

Alex: Steve, can you see the screen now?

Steve: I can just see the initial Cambridge public schools website.

[01:10:00]
Alex: Sorry, that's my bad. Hold on just a second. I'll check it out.

Steve: The last thing I want to show you all is that transparency again. Once Alex brings up ...

Alex: Hold on, here we go. I'm bringing it up. Cambridge public schools.

Steve: Great.

Alex: For Families.

Steve: Yep, and then Resources, another tab. In the middle box there's some tabs.

Alex: Yep.

Steve: [01:11:00] Then the third bullet down is Approved Online Resources. You can change that show list to 100 instead of 10 if you don't mind. Right there. This is an open portal to our families and our community about all the applications that are in place, the purpose of them, the grade level and content area. You can click on any of those active links for the agreement there, Alex, and it will bring up the actual PDF document of the contract that's in place.

Alex: Can I do that on a public WebEx?

Steve: Yep, that's fine. It's all public information. It brings up the actual executed contract with that vendor. Then back on the other page there, Alex ...

Alex: Hold on, let me just go back.

Steve: The last ...

Alex: Wait, hold on. Sorry.

Steve: [01:12:00] That's all right. Then just click on the word Data up there in the column so it will sort by ... All the way to the right. Now, all of these that have this little icon, if you hover over any one of those icons, it'll tell you the actual data elements that are being exchanged in those applications. We're really trying to be as transparent as possible with the parents and the community about where their students' data is residing, what protections we put in place, and why it is there.

I guess just to wrap it up, it does add one more level of complexity to the idea of implementing one-to-one, but whether it's the device, the network, the actual applications being used, and the fact that there's more and more access to free applications, we need to be thinking about all these actions, Google lens of privacy, as we implement these projects.

Alex: [01:13:00] Any questions or comments or thoughts on the privacy and security issue? Okay. We've obviously been doing our Q&A as we've gone through and our open discussion as we've gone through. Before we close up the conversation, is there any questions for any of the panelists, or do we want to return to any of the topics? Greg or Steve, is there anything else you want to add?

Okay, well then I want to thank everyone very much for participating. This is obviously an important topic. A lot of people are dealing with this and struggling with this. We'll be building out the webinar. We'll be sending out the PowerPoint to all the participants and we'll be publishing this webinar as part of a series of webinars that will be available
[01:14:00] to people. If anyone has any comments or wants to email us with any suggestions on things to tweak, change, shift, add, we've taken notes on the comments that were made during the discussion and we'll be updating that correspondingly.

John Brandt, did you have a question for Steve before we close up? John?

John: Yeah, could I direct a question to Steve?

Alex: Of course.

Steve: Sure.

John: He seems to be the ranking professional educator here in the panel. It involves a question, when we were way back in the beginning of the discussion talking about implementing one-to-one, and this addresses more or less political organizational
[01:15:00] issues. The idea of one-to-one and all it implies for changes in pedagogy of course brings pressure to change teaching and management style in a school or a district. Steve, you mentioned that of course in a large district, and I currently have had some firsthand experience in a large district here in Utah, these changes have to be incremental, but I question whether or not incremental change when you're addressing cultural issues in particular the autonomy of an individual teacher to do it their own way regardless of the capabilities now in place or evolving for one-to-one, whether it's feasible at least in one
[01:16:00] school setting to do this incrementally. It seems charter schools, not that I'm promoting charter schools by any stretch of the imagination here, but charter schools by definition have more of an opportunity to successfully implement one-to-one computing and all that goes with it, including changes in school culture than another public school.

Steve: If I get the gist of your question, it's is incrementally moving to one-to-one really feasible or the best way?

John: Yeah, I'm kind of challenging the notion that incrementalism over a number of years is actually workable. I think incremental for a large district would mean maybe
[01:17:00] implementing it full bore at our large scale comprehensively at one school, let's say of a pilot and then say, "Okay, it worked in this school, a smaller school. Now we're going to phase in some more schools rather than ... " Go ahead.

Steve: I think this is almost every other dilemma we have in K-12 education, that there's no right answer that fits every school and every district because there's so many different factors that go into it. You mentioned political. The way we do it here in Cambridge may not work in Utah in your district or may not even work in Somerville next door just because every community is different and all the factors are different.

[01:18:00] Having said that, I've been through both. I came from Maine and I was up there and was

instrumental in the first state-wide one-to-one program in middle schools. As being forced upon all middle school teachers all at once across the state, I can tell you that didn't work. There were definitely Apple laptops that never got taken out of the boxes for years before they had to be turned in again for new Apple laptops. That's a huge scale.

On the other extreme, here in Cambridge we had a very similar discussion we're dealing with coming up with our blended learning strategy, which is very similar to what we're talking about now. We had somewhat of a heated discussion about are we going to force this basically upon everyone and have everyone be expected to move to blended
[01:19:00] learning in some portion in all their classrooms? Or do we let it continue to grow organically and allow the leaders that are taking the lead to take off with it and others will come along? Really that's the direction we decided to go is provide all the resources, provide the devices, and support the teachers that are really moving into blended learning and maybe have some high goals for the district but not force every teacher to move into that direction. We do have pockets of one-to-one in Cambridge with expectations of using it, but within those schools, not everyone is getting those devices out all the time at this point. It is incremental.

I don't know if that answers your question, but I think it really depends on so many of the demographics of each particular school and district what will work best for your staff and your culture.

[01:20:00]

John: Yeah, thank you. That I think addresses my question and provides some additional insight into the political organizational issues of implementation, which I think the technical ones are tough. The political organizational ones are more difficult.

Steve: Absolutely.

Alex: Okay, excellent. Thank you. That was a great question, John. Thank you John and thank you Steve for that. Greg is no longer connected to audio. He's having some audio issues so Greg can't speak, but I just want to thank Greg and Steve for stepping up to be panelists on this and I want to thank everyone who came to the webinar and contributed and asked questions and was part of the discussion. Thank you very much.
[01:21:00] With that I think we will close the webinar and I appreciate everyone's participation. Thank you very much and we'll talk to you soon.

Steve: Thanks.

Greg: Thanks, bye.

John: Thank you.