House of Representatives Extended Subcommittee on Primary and Secondary Education

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Good evening Chairman Amstutz and members of the Extended Subcommittee on Primary and Secondary Education. My name is Sam Orth, and I appreciate the opportunity to testify on behalf of the Management Council of the Ohio Education Computer Network, its member Information Technology Centers, their school districts, and in support of the information technology needs for the K-12 community in Ohio.

As your committee listens to testimony about school funding, you will no doubt hear from a variety of experts and practitioners with regard to what direction our state should take on how our schools should be funded. I am not here to offer an opinion directly on school funding. I am here to talk about why information technology is vital to ensure our students have the best foundation necessary to be successful in college, their careers, and as lifelong learners.

It has been awhile since I last testified before the General Assembly regarding educational technology for our state's K-12 students. When I started my information technology career at the birth of the personal computing era in 1982, I never imagined all of the benefits that information technology would bring to how children learn and schools are managed. Throughout my career, whether working with schools as Systems Engineer for Apple Computer, or overseeing the state's educational technology programs when I served as Executive Director of the Ohio SchoolNet Commission, or serving as a Commissioner for eTech Ohio when I was the State's Chief Information Officer, or now serving as the CTO for the MCOECN; I have had the privilege of seeing firsthand how information technology has become a mission-critical tool for educating children in our nation's K-12 schools.

Unless you've been on a deserted island the last thirty years, it would be hard to avoid the profound influences that information technologies have on every aspect of our daily lives. Today, the computing power that you and I have in our smart phones exceeds what was available to NASA when they put men on the moon in 1969. Similarly, a game station such as an XBOX 360 or Sony PlayStation – available today for less than $300 – exceeds the computing power of the best military supercomputers that cost *tens of millions of dollars* in 1997. IT touches virtually every aspect of our lives from the way we communicate with each other, to how we receive medical treatment, purchase new tennis shoes, pay our bills, are entertained, and how, where and when we learn.

My point is that it would be difficult to find anything in our lives not touched by technology in some way. And if that's true for us, it's even truer for our children. To the people of my generation, technology represents something that is new or different since we were young. For our children these technologies are a normal extension of their identity – it is what they know and expect in their personal lives, their homes, and their future workplaces. So we have to ask ourselves, if technology is infused in nearly every aspect of our lives – why isn't it pervasive in every aspect of education? Why is it that our children – who are very comfortable and very accustomed to living and using technology – are denied this experience at school?

Between 1994 and 2004 there were four primary educational technology goals funded by the state. These visionary goals were connecting every school building, wiring every classroom, obtaining one computer for every five students, and implementing a program supporting video distance learning. These were ambitious effort for their time, and as a result of this considerable investment Ohio

demonstrated leadership in educational technology. But today, the concept of having one computer for every five students is as inadequate as having one textbook for every five students. Can you imagine not being able to do your homework because another student across town had the textbook? To keep pace with our changing digital society we need a new vision for using technology in our classrooms.

Realizing visionary goals requires a renewed commitment of state-level funding. Unfortunately, the economic pressures in recent years sidelined many state initiatives. Consequently, most new effort shifted towards local funding. This has resulted in increased taxpayer expense and inequitable deployment of new technology benefiting educational initiatives. Without a deliberate orchestration of technology acquisition aligned with a state-level educational policy, students have widely differing educational experiences. Also, this inherent inefficiency and expense undermines our ability to have a common goal and shared expectations for our educational system.

We have noted the profound influence of technology in our lives. Our expectations are greatly influenced by the consumerism of IT. Innovations such as the iPad, smart phones, and access to information anytime, anyplace have combined to amplify end-user expectations. The chance for students to learn at school or at home is both an opportunity and a challenge.

K-12 schools are not alone in the difficulties they face in acquiring new technologies, applications and educational content. Across the country and in Ohio, many governmental entities are challenged by the same fundamental problem with their citizens' expectations regarding access to services. How do they meet the rising technology expectations of their organization's consumers in a time of economic uncertainty? The bottom line for most governmental entities is that citizen expectations of IT service delivery are increasing faster than the IT organization's ability to deliver.

One solution is to turn our investments upside down. Let me explain what that means and how we can achieve it.

There was a time not so long ago when computing devices were very expensive. Due to the costly nature of hardware, it became customary to spend a higher percentage of the IT budget on the physical computers and a smaller amount on software. The over investment in additional hardware (what we call "infrastructure") and less on software and applications resulted a ratio of 70% infrastructure and 30% applications. This is a very common investment ratio for governmental entities.

The problem with this investment strategy is that it is backwards. Our citizens have high expectations for accessing government services and data, and this interaction occurs with applications, not hardware. Said another way, applications are where the value is perceived. We need to be spending more on software and applications and less on infrastructure. This is what I mean by "turning it upside down." But it isn't as simple as just eliminating hardware – this could have the negative effect of making services slower, not better. What is needed is using hardware more efficiently, and the technology to do that today is often called a "cloud".

Fundamentally, cloud computing addresses the imbalance in IT investment, by providing a new style of computing that provides IT managers with new strategies and tools that result in increased efficiencies, more agile response to the needs of the business, and better customer-service.

Cloud computing changes the emphasis of owning and managing on-premise IT hardware and software products by shifting some or all of an organization's IT assets to a shared service model that the organization provides to itself or obtains from an outside service provider.

Cloud computing is not a new idea in Ohio. The Ohio Education Computer Network was created in 1979 to provide time-sharing services to schools across Ohio, and operates as a cloud provider today.

When the Ohio Education Computer Network (OECN) was created by action of the Ohio Legislature, it authorized the Department of Education to form regional data processing centers as providers of shared accounting systems for K-12 entities. Each regional center was owned by the school districts it served and governed by the administrators of those districts.

Today there are 23 regional centers (called ITCs) serving approximately 1.4 million students in over 900 school districts, career centers, community schools, and educational service centers. Each ITC provides ODE required core services of accounting and payroll; student information management; K-12 digital library; state-required reporting; and connectivity between schools, the ITC, and the Internet. These ITCs operate in a shared cost model to provide data processing services and technical support at considerably lower costs than is possible if each district operated independently.

Over the past 30 years ITC services have grown to meet the technology needs of participating entities. The local governing body determines the total budget, costs for services and participation, staffing levels, policy, and administration of the ITC. On average participating entities contribute 70% or more of the total ITC operating budget and are actively involved in ITC governance and the local decision process. A single purpose for fiscal data processing has evolved into a comprehensive set of services matched with technical expertise and real-time support needed to ensure district success.

Table 1. Sample Set of ITC Services.

Student scheduling
Grade reporting
Attendance and discipline tracking
Electronic grade books
Parent access portals
Library automation
Electronic resources
Performance analytics
State required EMIS reporting
Special education reporting
Learning management systems
Video distance learning
Telephony systems
Local and wide area networking
Internet access
Internet 2
Electronic document management
Electronic mail
Spam filtering
Mail archival and retrieval
Data storage
Backup and recovery operations
Web hosting
Virtual server hosting
Network security
Backup
Disaster recovery
CIPA compliance

Let me give a sampling of the scale and significance of the OECN ecosystem of today:

- OECN ITCs assist school districts in processing almost 10 million paychecks, purchase orders, warrants, and other fiscal instruments each year.
- Each year ITCs generate over six million student progress reports and maintain more than 1.2 million parent access accounts.
- The Ohio K-12 Network supports connectivity to 3500 buildings, broadband

access for 1.9M students, and secure and reliable infrastructure for 120,000 teachers and administrators.

- The collective purchasing power of the OECN has decreased the per-megabit cost of Internet to schools by 98% since fiscal year 2000.
- OECN coordination of E-Rate applications has resulted in more than $1 billion in federal funding to Ohio over the last decade.
- The OECN INFOhio K-12 digital library processed 41.8 million circulation transactions on behalf of 2,413 school libraries in 2011.
- In 2011 students performed 18.4 million searches and downloaded over seven million articles from INFOhio electronic resources ***at no direct cost to schools*** due to the centralized acquisition of licensed digital resources.

In addition to these examples, ITCs transmit millions of data records from school districts to ODE to fulfill annual state data reporting requirements. For example, this data will include compliance information for the third-grade reading guarantee as the program is implemented. Without OECN support key school performance indicators for new initiatives like the third-grade guarantee would be too expensive and time consuming to implement.

The value of the ITCs are in providing a means to deliver technology services and support at a lower total cost by combining similar needs of multiple entities to leverage greater economy of scale. In addition, the common network shared across ITCs provides greater consistency for program implementation and data reporting on a statewide basis. It is simply more efficient to deliver and administer state programs through trained professionals at ITC support sites and the coordinated support structure of the OECN than it would be if the state attempted to deliver programs to each school individually.

The *Beyond Boundaries* shared services action plan published jointly by the Office of 21st Century Education and OBM in June emphasizes the importance of information technology shared services from ITCs and ESCs:

> *"Together, they also retain the experience and capacity to efficiently deliver extensive shared services offerings. These centers are the logical starting place for the regional provision of shared services for schools and local governments in core areas of technology, administration and educational support. The survey, stakeholder meetings and research conducted during development of this plan confirmed the appropriateness and capacity of these centers to expand beyond their traditional customer base of schools."*

You can see from the examples that the historical focus of the OECN has been on administrative needs and infrastructure support. We have developed a system of K-12 administrative services that are highly efficient. We can leverage our infrastructure and operational expertise to bring this same efficiency to instructional technology. Our vision for the future of educational technology is to gather the lessons and practices that have been proven to bring about administrative efficiency, and apply those to technology services for the classroom. We can manage and deliver these applications at a regional level to provide greater access, improved support, and lower operational costs for Ohio. We are currently taking steps in this very direction.

In addition to our efforts there is more that needs to be considered. We need to renew our commitment to ensuring that teachers and students have access to the technology tools and resources they need, especially high quality educational content, Internet connectivity, and sufficient computing resources for every student.

We need to support the means for students to run applications, access resources, and connect with subject matter experts, educators, parents, and each other. This is driving demand for wireless capacity in our schools to allow students to use multiple devices simultaneously. **We need more computing devices – one for each student so they no longer have to share a personal learning tool.**

But adding new devices and resources is limited without addressing the corresponding need for bandwidth. We applaud the Governor's recommendation to expand the state technology backbone to 100Gb capacity through the Capital budget. It can't stop there – otherwise it will be equivalent to construction of an eight-lane highway without the on ramps. We need the connectivity – the on ramps – to get on this expanded network. **We need to increase the connectivity for each building to accommodate the traffic generated by these devices, as well as corresponding growth in the network links from the building to the ITC and the ITC to the Internet.**

And finally, this needs to be wrapped in a commitment to build and lead a new vision – as a state-level effort – for educational technology.

To recap we call for the following specific considerations:

1. An educational technology vision that addresses the needs for access to technology by all students and teachers in the classroom, such as implementing a one-to-one computing initiative.
2. Programs to assist districts with in-building wireless networks capable of supporting increased device use and the online assessment.
3. A commitment to fund renewal of the existing building, district, and ITC connectivity to support the bandwidth needs into the future.
4. Continued funding for the OECN as we fulfill the regional support role for administrative and classroom technology as outlined in *Beyond Boundaries*.

I appreciate this opportunity to speak with you this evening, and I would be happy to address any questions that you may have.