A Question for the New Technology Leader

After the evening's community info session, a technology referendum voter approaches. "What can we really expect from this expense? You bought all those Smart Boards a while back and my kid didn't seem any smarter than if you just used a blackboard." At a board presentation, a business executive on your school board interrupts, "What's the ROI on this $360,000 network upgrade? How do we know what all this technology stuff, that you now want to add to here, is really costing us?" In your budget meeting, your superintendent chimes in, "So what are all the hidden costs of this new student database system? How much is this going to continue costing us down the road?"

Your district finally saw the light and put a Chief Technology Officer in place; you. In your second year, you are desperate to move ahead with key technology updates and upgrades to, first of all, keep things afloat and then to move the district into the modern era with proven educational technology and its supporting infrastructure. Can you answer these questions well enough to win over the voter, respond to your board member, and reassure your superintendent? If you can't, your whole technology program is at risk and you can probably kiss both your ambitions and control of your budget goodbye, because others will cut them down to size.

How can you explain the supposed improvements this referendum will provide? How do you speak in the business terms your board wants to hear to justify your big hit on the capital budget? How do you make the rest of your district cabinet understand the true total cost and benefits of these educational technology investments?

You do it by removing from their minds the concept that educational technology is an expense or cost center. You present that this is an investment; one that will provide clear justifiable value—the *value of investment*. You must argue that though some investments will provide financial return in long-term *quantitative* cost or efficiency (ROI), most of the results will be in the realm of *qualitative* value—an improvement in student learning and a way to reach the strategic goals of the district. You also show you have the complete financial and strategic story because you've accounted for all the short-term and long-term costs, direct and indirect, that will accrue over the years—*the total cost of ownership*. Value return and total cost explained in clear strategic terms with real numbers; no hand waving and vague platitudes.

Smart Investments in IT

As states and school districts better recognize the need for a robust technology infrastructure for digital learning and assessment initiatives, tight budgets are weighed against overall cost savings afforded by increasingly workable technologies. Nonetheless, the focus on near-term solutions to patch immediate needs and some skepticism on the efficacy of educational technology makes effective implementation and support of large technology deployments increasingly difficult. Schools often operate by making short-term decisions without fully evaluating implementation challenges and long-term effects. Many districts simply delay replacements or defer maintenance—not a smart move when changing the culture of teaching and learning is also a top desire.

CoSN's SmartIT initiative provides strategic recommendations for the smart CTO. There are several smart ways to address the cost and choices of technology infrastructure and projects. SmartIT addresses these with a strategy of applying interactive tools to tie the district's technology investments to its strategic goals. Your district can keep your technology programs intact, and position your district to run a smarter, stronger, and more cost-effective technology—and education—operation.

What is SmartIT?

SmartIT is an initiative to help Chief Technology Officers/district technology leaders, superintendents, and budget officers master tight budgets and effectively support educational needs with appropriate strategic decisions in technology investments. School technology programs and replacement cycles—with all the proven benefits they offer to educators and students—are often underfunded. Such constraints present not just challenges, but also opportunities to rethink and strengthen technology investments, operations, programs, plans, staff, and results. SmartIT will help technology leaders move forward in key areas with tools and resources that enlighten and guide your efforts in a way that makes sense for your circumstances and strategic goals.

ROI, VOI, TCO

Your board chair states, "Businesses has to show the Return on Investment for technology, why can't our district?" Believe it or not, this is an increasingly common question, and one with some legitimacy in the light of some reports of lack of real educational achievement from previous expensive technology expenses in computers.

So, how do you even begin to answer your school board chair; how does the savvy Chief Technology Officer demonstrate the technology project is worth the investment? In schools, the discussion should be around *value of investment* (VOI) as a more appropriate value than return on investment—a business term calculated by measuring benefits in dollars to the top or bottom line of the business. Our public schools are not profit-driven entities and do not measure their success in financial terms. The business of schools is child development and learning. School system leaders must understand their district's educational goals and how technology will support those goals. They need to demonstrate the *value* of the technology investment.

Now, there are occasions when a large investment can be shown to save overall expense or improve operational efficiency in the current educational program. With those technology projects, leaders then need to demonstrate a business-focused return on investment.

Most importantly, it is not adequate to only deal with the initial investment, though that is the most visible focus of a large capital investment, sometimes purchased with levy dollars. The operational and support costs over the life of the investment are just as important and can often add up to be larger than the initial purchase and installation. To account for that, technology leaders must make *the project total cost of ownership* (Project TCO) a major part of their planning and investment decisions.

The **SmartIT Initiative** reflects the ongoing priority for technology leaders to strategically plan and manage IT investments by providing tools and resources that focus on:

■ **Student Outcomes & Budget Management:** Making technology core to the teaching and learning mission to increase student achievement even as budgets shrink.

■ **Total Cost of Ownership**: Understanding the direct and indirect costs of implementing and maintaining computing devices and related infrastructure, using those costs to articulate the effects of proposed changes and to reduce operational costs.

■ **Value of Investment:** Evaluating proposed projects through cost/benefit analysis to understand and articulate the financial and non☐ financial benefits of projects in terms that allow stakeholders to understand the value of the investment.

Likewise, when annual budgets are developed, there is a tendency to cut from administrative programs to provide funding for classroom activities. Unfortunately, cuts in IT funding (such as delaying replacement cycles or reducing IT personnel) often lead to increased expenses for the school system in terms of computer down-time and end user time dealing with technology issues. It is in the best interest of the school system for leaders to understand the ramifications of technology budget cuts in terms of *the entire IT environment total cost of ownership* (TCO).

The Two Key Resources for SmartIT

CoSN's SmartIT resources are provided in two areas to put technology investments in perspective:

1. **TCO Assessment Tools**

   A Total Cost of Ownership Assessment can be a holistic approach to understanding costs and effects of cuts. These TCO assessment tools are focused on the district's *entire IT environment* as opposed to focusing on *a specific project*. TCO is a methodology to measure and understand all of the costs of acquiring and maintaining the district's entire IT infrastructure and operations including all infrastructure, user hardware and software, staff support costs, and user-related costs. A TCO assessment will help you articulate in quantifiable terms the overall effects to the district of proposed budget cuts or other changes that could actually result in inefficiencies. For instance, cutting a technical support staffer may look good on paper, but that person's work doesn't just go away; it shifts to teachers or other support staff who may be expensive and not adequately trained to fix computer and network problems. The net result is frustration, inadequate lesson planning, unavailable lab systems, and slow resolution to administrative system problems. A good TCO assessment will empower district leaders to make informed decisions about the effects of reducing support staff or delaying needed hardware and software upgrades.

2. **VOI Project Tools**

   The VOI Project Benefits Workbook and VOI Project Cost Estimator Workbook comprise the VOI Project Tools. These are focused on a *specific project* as opposed to focusing on the district's *entire IT operations*. The VOI Project Tools are designed to help school leaders measure the costs and benefits—both tangible and intangible—of proposed projects and connect these benefits to the organization's mission, goals, and mandates. For projects focused on saving money only, the VOI Project Cost Estimator also provides a Return on Investment (ROI) calculator and payback time.

Knowing your TCO

TCO is a comprehensive way to understand all of the costs involved in implementing and maintaining technology in the school system. Direct costs include technology (hardware, including network infrastructure, software, and external service providers) and labor (both IT department and any other district or contracted personnel responsible for supporting the technology infrastructure). But TCO also takes into account unbudgeted indirect costs, which are the costs of user time in technology training and dealing with technology issues.

Performing a Total Cost of Ownership assessment takes time, effort, and input from other departments. So, why go through this process?

- TCO is a valuable tool in the budgeting process. With a TCO assessment you can model the effects of proposed IT personnel changes or delayed technology upgrades

- Annual assessments allow you to continually measure and compare progress towards a more efficient technology environment, including both direct and indirect costs
- TCO provides insight into Value of Investment costs (VOI project TCO) for proposed technology related projects, helping to ensure appropriate resources for project implementation and ongoing support

With SmartIT, CoSN firmly believes it is possible and important to understand all of the costs involved in implementing and maintaining your technology infrastructure. We have constructed an Excel workbook tools and user survey to do so. The TCO assessment workbook and the end user survey for indirect labor for input to the TCO assessment workbook are available on the TCO section of the CoSN SmartIT web site.

TCO Tips and Recommendations

1. **Get Executive Support**
   A TCO assessment includes time to gather input and analyze the results. It requires cooperation from other departments including HR or payroll and the business office. Executive support is important to raise the level of awareness and to compel participation and buy-in from other departments.

2. **Use a Baseline**
   To understand current baseline costs, conduct an enterprise-wide study of your current year costs. This can then be used for comparison scenarios or subset studies.

3. **Survey Users for Indirect Labor**
   The best way to determine the indirect labor components (time spent by users in training or dealing with computer related issues) is to survey a statistically significant subset of users. Since it will take a couple of weeks to get the results back, it helps to get the survey out early. Surveying students is optional, but teachers, aides, and administrative staff should be surveyed. The TCO tool is looking for the total number of indirect labor hours, not an average. Use the downloaded Indirect Labor User Survey to assemble this data. You can then easily copy and paste in one action the results of each returned survey into the TCO workbook.

4. **Make Educated Estimates**
   TCO is not an exact science. A good educated estimate for any input field with some limited research is adequate; over time your processes and accuracy will improve. For instance, to obtain the amortized cost for client computers purchased over the last four or five years, you don't need to pull all of those invoices. If you know how many client computers you have bought over that time period and about what they cost on average, you have a good estimate.

5. **Include All Direct Labor**
   Direct labor includes all personnel who have at least a part-time responsibility for supporting the computing environment, measured in FTE. This may include teachers, school personnel who are not part of the district computer services organization, outsourced services, and no-cost students and volunteers. Understanding this direct labor allocation will allow you to evaluate the most efficient approach to support. Note that technology education teachers should not be included unless part of their time (pay) is designated to technology support.

6. **Include As Much Data as Possible**
   Depreciate major software purchases (initial licenses) and include annual licensing fees. Contracted labor services, such as hardware maintenance contracts, can be included under Direct Labor/Outsourced. ISP and other external services go under Technology/Other/ External Application Providers.

7. **Use the Example Workbook**
   An example workbook completed with sample values to give you some guidance in completing your Assessment is available on the TCO section of the CoSN SmartIT web site

The CoSN VOI methodology

But, how do you then measure investments in technology that are focused on educationally critical, yet qualitative benefits? For example, most school districts have a long-range strategic plan with goals like:

- Increasing student achievement
- Increasing student engagement
- Improving attendance and behavior
- Attracting and retaining staff
- Developing 21st century skills for students
- Decreasing drop-out rates for at-risk students
- Engaging parents and communities

With SmartIT, CoSN firmly believes it is possible and important to measure qualitative benefits in addition to quantitative benefits. We have constructed two Excel workbook tools to do so on the VOI section of the SmartIT web site.

This approach can be used to:

- Sell a project internally or to the School Board
- Articulate the costs and benefits of the project to constituents
- Evaluate the comparative costs and benefits of two or more projects competing for the same funding
- Determine later whether a project should be sustained

The steps to follow when performing a project-based Value of Investment exercise include:

1. **Determine Cost.**
   The first step is to understand the cost of the technology initiative over the life of the project—the *project* Total Cost of Ownership (Project TCO). The concept behind TCO, as mentioned, is to determine all of the costs involved in securing and operating the proposed project

   Initial purchases, training and implementation costs must be amortized or annualized and ongoing costs must be included. For example, to do this for a projected one-to-one initiative, initial amortized costs could include devices over four years, yearly network upgrades for broadband capacity, and initial teacher training over four years. Unbudgeted but real costs include indirect labor, which is the hidden cost of time spent by users in training and handling technology problems. Typically, these unbudgeted costs are as large as or even larger than the direct costs. A Project Cost Estimator to help you to identify and summarize all of these costs is available on the VOI section of the SmartIT web site.

2. Calculate Anticipated Savings and Revenues.
   Most projects, even those focused on qualitative benefits such as student achievement, have some cost savings. There may also be some anticipated increase of revenues based on higher attendance, grants or state/federal aid. The Project Cost Estimator allows you to identify and apply infrastructure and support savings to the project cost, and the VOI Project Benefits

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Workbook will help you to identify other dollar savings, user productivity enhancements, and increased revenue, and apply them as benefits. Qualitative benefits, such as student achievement or the political value of increasing community support, should be stated in measurable terms as completely as possible.

> ***Important note:*** *The remaining steps in this process must be done as a team effort and not just by the CTO or technology leader. This involves judgements regarding the district's strategic goals, their relative importance, and the assignment of quantitative values to the qualitative goals. This requires the participation of and consensus of key district strategic leaders, including the superintendent (or assistant superintendent), the CFO or business manager, and perhaps even the curriculum director, along with any others on the strategic team.*

3. **Measure (Score) "Qualitative" Benefits.**
   Since the business of schools is education and schools operate for the public good, many or most of the benefits of implementing technology cannot be measured in terms of dollars; we call these qualitative benefits. For these to be considered benefits they must directly or indirectly affect the school or district strategic plan—mission, goals and mandates. A VOI Project Benefits workbook is provided on the VOI section of the SmartIT web site to help you to identify and apply these qualitative benefits with the following:
   a. Determine school/district goals and assign a relative importance to each.
   b. Align anticipated project benefits with the appropriate goals.
   c. State the an0cipated project benefits in measurable terms.
   d. Agree on the effect of each benefit on applicable goals. A total qualitative benefits score is calculated.
   e. Enter probability of success; the total qualitative score is multiplied by the probability of success for a risk-weighted benefits score.

   The sample table below shows an example of the result of this process.

4. **Compare Projects.**
   For each project you now have a cost and a benefits score. A higher score indicates a bigger project benefit. So for each project, Score ÷ Cost = Bang-for-the-Buck. The project with the highest Bang-for-the-Buck provides the most value for the expenditure.

5. **Evaluate Results**.
   Once your project has been implemented, you have an opportunity to objectively review actual costs and benefits versus the projected costs and benefits. This will allow you to concisely respond to the project skeptics. Since the anticipated costs and benefits were stated in measurable terms, the actual results can be measured:
   a. Actual costs vs. anticipated costs
   b. Actual savings or revenues vs. anticipated savings revenue
   c. Actual measurable benefits vs. anticipated benefits

TCO Methodology Flowchart

The flow for executing the VOI methodology is shown in the chart below:
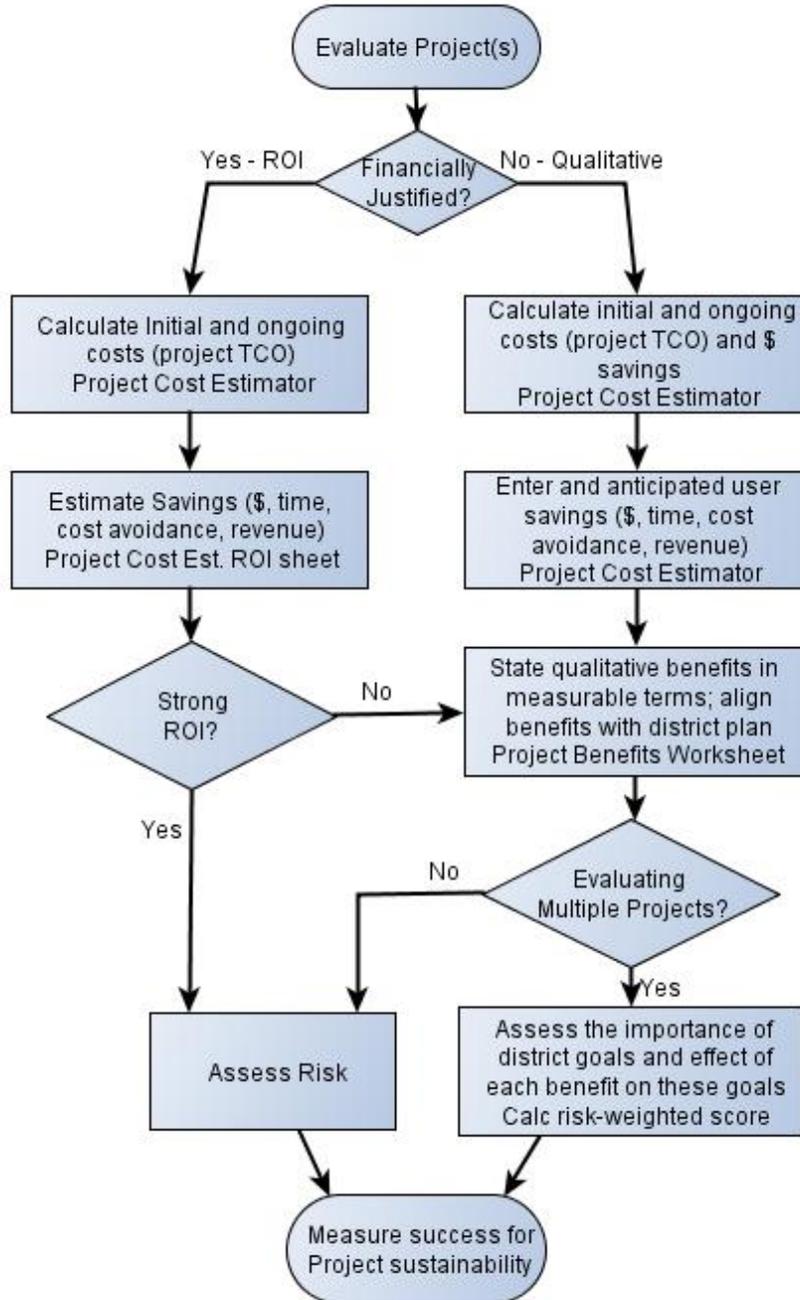
Example Project Benefits Table

School or District Mission, Goals and Mandates	Importance 1 - 10	Anticipated Project Benefits* State in Measurable Terms (Substitute your specific project goals)	Effect* -10 to +10	Score (Calculated)	$ Savings
Perform within top 25% of schools in the state	7.0	Raise one-to-one student math scores from 57% passing to 62% passing by 2011	4	28	
		Raise one-to-one student language arts scores from 55% passing to 62% passing by 2011	3	21	
Keep students in school through graduation	5.0	Increase graduation rate from 87% to 94% for this graduating in 2011	9	45	
Prepare students for workforce and college success	8.0	90% of students will graduate with measured proficiency in the following 21st century skills by 2013: Teamwork and collaboration (imbeded in social studies core) Higher order thinking (imbeded in math and science core) Communication and presentation (imbeded in social studies and language arts core)	5	40	
Provide equal opportunity for all students	9.0	Each student will have 24/7 access to a computer, software image and internet	3	27	
		Gap on standardized math for minorities will close from 8% to 4% by 2011	2	18	
		Dropout rate for minority students will decrease from18% to 8% by 2012	2	18	
		Close gap on standardized test scores for students wit disabilitie from 8% to 3% by 2012	1	9	
		Total Score and Dollar Value for this Project		**206**	**$0**
Probability of Success	**90%**	**Risk-weighted Dollar Value and Score for this Project**		**175**	**$0**

The Bottom Line

Understanding the costs and assessing the value of a district's IT environment and any proposed technology projects is vital if you, the technology leader, want to have credibility with your school board, CFO, superintendent, and community. Clearly it takes work even with the CoSN tools. But, the reward in doing this is a concise understanding of the projected benefits and informed decision-making, and the ability to answer your school board and community when asked about the technology investment.