White Paper — 21st Century Education Series

Business Process Improvement for School Districts

Executive Summary

Delivering education is a complex project that relies on many individual programs to come together to support the mission. We might compare the structure of a public school district to a table supported by many legs. The end goal is to deliver education, but without strong support from each and every leg, the table top begins to either wobble or warp.

Educators focus their attention on delivering the best possible instruction — and rightly so, for that is their expertise and their primary function. But the strength and integrity of those processes that are referred to as infrastructure or business processes is equally important to the stability of that table top. In business, there has long been an understanding that every process must be optimized for the end result to be optimized. Quality assurance programs such as ISO 9000 take a systematic and holistic approach to ensure that all processes in an organization are examined and perform in the most effective and efficient way possible.

IDEAS has applied our experience in business quality assurance to developing a protocol for assisting school districts to optimize and strengthen their business processes in ways that best support their educational goals and objectives. By bringing in outside resources with the requisite expertise, district staff can remain focused on their core objective: education. IDEAS staff work with that handful of district employees who are not educators. We help them to identify their customers and their needs and we work with them to systematize and optimize their business processes so that those needs can be met efficiently and effectively.

Consider that in the state of New Mexico, school districts as an aggregate reportedly spend 5.4 percent of their total operational budget on general administration and central services. When the way that function codes are typically gamed to affect this self-reported number is taken into account, the actual percentage is likely to be closer to 8.4 percent. In a district we examined recently, even the self-reported number had risen to 7 percent in 2007-2008, and in many districts the real percentage is actually as high as 16 percent. On an operational budget of $20 million, reducing the cost of general administration and central services from the real to the reported state average would put $600,000 back into the classroom. Operations and maintenance consume on average between 12 and 13 percent of operational budgets in New Mexico. Improving efficiency of those services by 25 percent (the typical goal of a process improvement effort) would return another $640,000 to the classroom. Add to these figures the amount of waste that inefficient infrastructure imposes on the entire organization, and a reasonable target would be to return about 7 percent of the entire operational budget to the classroom — in our sample district, that would be $1.4 million.

We tame $10 elephants.

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Why Focus on Business Processes?

Until recently, business and education have been largely considered incompatible professions. Business people largely subscribe to the myth that educators inhabit ivory towers divorced from the harsh realities of everyday life, while educators largely subscribe to the myth that business people, being driven by dollars and not values, have nothing to teach educators or contribute to the advancement of education. Today, however, the US is seeing a sea change in these attitudes as educators begin to understand that without sound business practices, the educational infrastructure cannot support their endeavors, and business leaders understand that without a sound educational system, they will have no qualified employees to drive the future of their businesses.

Nonetheless, it remains a false parallel to say that a school district can be run like a business. Public education is a public service, paid for by taxpayers, who in turn have certain expectations of the nature of the service. Regulations dictate what services will be offered and require that all "customers" be served, whether they are "profitable" or not. Revenue sources are almost as tightly regulated as expenditures, and school districts have traditionally had little ability to take action to increase revenue.

School district governance is designed to recognize this unique structure by balancing the governing authority of an elected volunteer board against the administrative authority of a professional educator in the role of Superintendent. This balance is often uneasy, and made more so by the natural fact that those who serve on the board are often business people and not educators, while those who rise through the educational hierarchy to the role of Superintendent often have few or no business skills.

Yet one critical commonality stands out: like a business, a school district must have cash flow to operate. In flush times, government sends a steady stream of revenue to school districts, who, unlike businesses, are free to use it (or waste it) with little regard to efficiency since they can always count on a little bit more next year to fix what was ill-conceived or unfinished this year. In times of economic weakness, however, inefficiency means that school districts are forced to make contentious and devastating choices about how to allocate shrinking revenues.

Business process re-design aims to increase both effectiveness (to produce a higher quality product) and efficiency (to produce the product at lower cost). Businesses pursue business process re-design to increase profit. School districts, which equally depend on business processes to manage their cash flow, pursue business process redesign to drive more money into the classroom. In times of shrinking revenues, improving effectiveness and efficiency of operation is critical to protecting vulnerable academic programs from cost-cutting.

The entire focus of IDEAS' practice in business process improvement for school districts is this: **to drive money from administration into the classroom.** In our experience, our proven methodology for analyzing, measuring and redesigning business practices can save a district from **25 to 30 percent** of administrative costs in the management of both operational and capital funds.

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What is a Business Process?

A business process is a set of related, structured, sequential actions that produce a specific output (product or service) for a particular customer or group of customers. Business processes are often called workflows and represented as flowcharts. At IDEAS, we tend to refer to them as workflows, but it's important to understand that by this term we refer to the flow of the entire process —including human actions and human-system interactions — not just the movement of the paper that documents the process[1].

A workflow begins with an input and ends with an output. More often than not, the output of one process is the input for another. Because of this dependency relationship, inefficiencies and inaccuracies in predecessor workflows multiply the inefficiency and inaccuracy of their successor workflows. Thus, it's important to break down the barriers created by functional silos and structural departments and optimize the workflow through its full length.

Business processes in business are generally grouped into three major categories: management processes, supporting processes and operational processes. Management processes are high-level strategic governance processes and supporting processes are those whose customers are internal (accounting, human resources and technical support, for example).

This process map shows a typical district process for approving a purchase order. Verification is being performed by staff on paper documents. Signatures and stamps on paper attest that items have been verified. It costs between $118 (best case) and $226 (both rework loops invoked) per document and takes seven working days to perform.
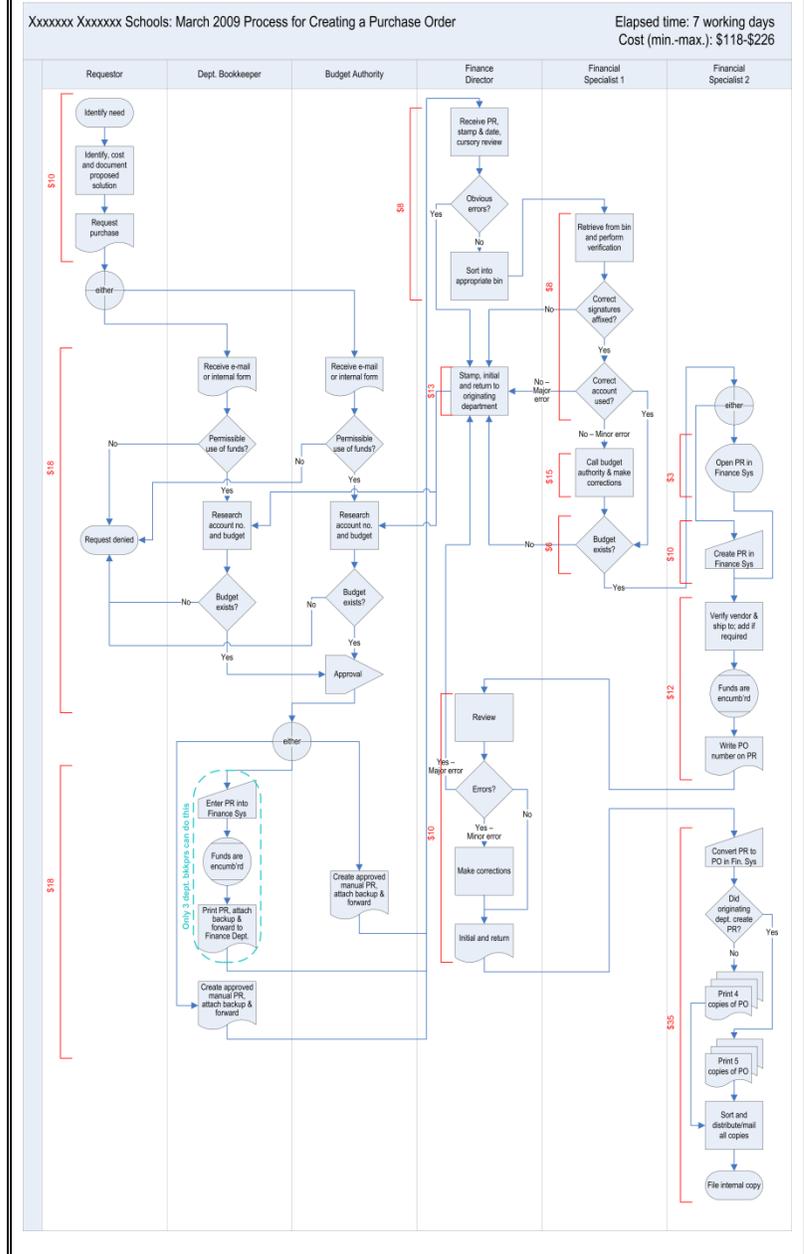
[1] Many so-called "electronic workflow solutions" are just automated ways to move virtual paper through the same steps by which physical paper has always been moved through the system. To truly optimize the workflow, one must first examine whether all those steps add value and are therefore necessary.
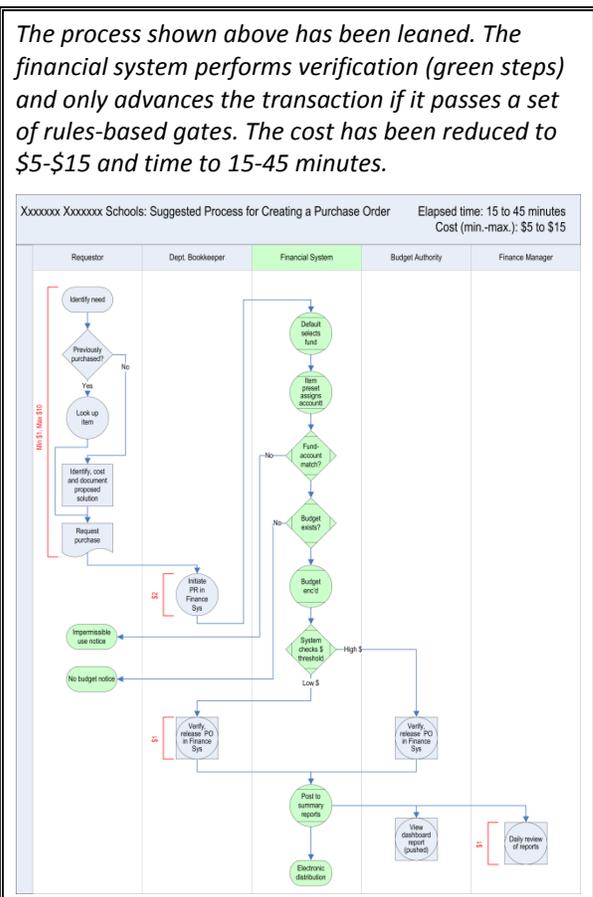
Operational processes are those whose customers are external — these are the processes that are at the core of the business purpose. They create value that customers perceive and pay for, including functions such as purchasing and manufacturing as well as marketing and sales. The way in which performance is measured and reported is different for each process category.

In looking at the business processes of school districts, we propose the categories of strategic management processes, infrastructure processes and educational processes. Just as in business, management processes are high-level strategic governance processes. Infrastructure processes include both what business calls support processes (those whose customers are internal) and processes that deliver tangible (but not core) products to external customers, such as facilities maintenance, transportation and food services. Educational processes, of course, are those that drive the intangible core "business" of a school district: education.

The Role of Information Technology

Information technology (IT) occupies a special role in workflow or business process optimization. If the mission of the business or research organization is to create IT, then IT is both a supporting and an operational process, but for most organizations, IT is an infrastructure tool that facilitates every process in the organization. As such, IT becomes in a sense a fourth, overarching category of business processes. Strategic use of appropriate IT solutions bridges both different categories of processes and different workflows, improving communications and breaking down the functional silos that act as barriers to both efficiency and effectiveness.

In today's era of electronic communication, massive data collection and transparency imperatives, information systems are required tools for every business process. Business processes are activities that involve repetitive actions and transactions, and IT is a wonderful tool to automate processes — but it is important to remember that it is only a tool, it is not the workflow. Any IT solution will not in and of itself **improve** or **optimize** a workflow, it will only speed it up. If the workflow is inefficient or ineffective, adding a technology solution will simply allow the workflow to be performed ineffectively and inefficiently faster. But the right technology judiciously applied to a workflow can increase both effectiveness and efficiency by orders of magnitude. Selecting and applying the appropriate information technology is a process in and of itself, and it must involve all the stakeholders. The most complete information program in the world can not deliver its promise if it is incompatible with the network infrastructure on which it runs. Similarly, the most attractive reports are useless if the data that should populate them is compromised because the method of collecting the underlying data is incompatible with either the technology context or the business context.

The process shown above has been leaned. The financial system performs verification (green steps) and only advances the transaction if it passes a set of rules-based gates. The cost has been reduced to $5-$15 and time to 15-45 minutes.

In this area, school districts can benefit greatly from the experience of business. District administrators are educators, and few of them have useful experience or understanding of management information systems. Few districts can afford to engage an experienced and knowledgeable Chief Information Officer who can assess information technology needs and identify a solution that meets all the technical as well as all the information needs of a district.

Of critical importance to school districts is accurate communication between and among different systems and the ability to verify the communication. For example, attendance and special needs tracking software must provide electronic reporting to state fiscal control systems that calculate operational budget based on district membership and then return the budget allocation to the district's financial control software. Data dropped or corrupted at any point has a direct impact on the district's allocation, which in turn impacts resources that can be allocated to the classroom. The typical district may have four to seven internal systems, none of which communicate with each other, and two to four external systems with which it must exchange data. Building the bridges and verification systems to manage all those threads of communication can eliminate a great deal of time spent manually comparing printouts and re-entering data from one system to another, as well as eliminate the 10 to 15 percent error rate that is typical of each manual data transfer between disparate systems. The opportunity for error is of particular concern when one realizes that in many districts, information is manually flipped between systems 5 or 6 times.

Once the right technology has been chosen, it is important that it be properly maintained. Just as deferring preventive maintenance on buildings can lead to catastrophic physical infrastructure failures, deferring or not providing for database maintenance can lead to catastrophic information infrastructure failure. A critical aspect of MIS/IT management that is often ignored with disastrous consequences is the need to develop, agree on, publish and train to a best practice workflow and the process map for the entire system function — including the maintenance, back up and upgrade schedule — prior to introducing any new MIS/IT system.

Step 1: The Business Process Audit

A business process audit serves to discover the baseline and identify the processes that are likely to benefit from a redesign. We want to find out what business processes are in use in the school district and whether they are performing or not — quite simply, what is working and what is not. Each workflow is decomposed into its component workflows: in traditional Quality Assurance terminology, the higher level workflows are processes and the lower level ones are procedures, which may be further decomposed into specific work instructions. As we are not at this stage performing a full-scale quality assurance audit, we will typically analyze and map top-level processes and selected critical procedures.

The business process audit follows a quality assurance audit protocol:

1   Interview employees so they can tell what they do

2   Examine the documentation that corresponds to the described workflow

3   Observe the actual workflow operations to see what they are doing and map the workflow

4   Examine the IT system to verify the workflow being observed

Process analysts look for correspondence between the four windows on the process. Any discrepancy raises a red flag, which results in recommendations for immediate remediation or in the team returning to that process to do a more in-depth analysis that can lead to detailed recommendations for optimization. Where looking at the four different windows yields four different views, we identify a critical issue and the process analysis may be halted for a forensic audit.

For example, we might find that staff are performing a process exactly as they told us they were and the IT system demonstrates that it is so, but there are no written procedures or desk books that document the process for a substitute or a new employee. In that case, the recommendation would be to write the procedure and validate it. On the other hand, we might find that the IT systems do not support what is said and what is documented. In this case, we would want to map the process in detail, track discrepancies to their root cause, and prepare a plan to resolve them.

The analysis identifies the most critically inefficient or ineffective processes and prioritizes those that need to be improved. Prioritization takes into consideration not only the cost savings to be obtained, but also the degree to which optimizing each candidate process will advance the goals of the district. For each process, a broad brush recommendation is developed with a suggested plan for the proposed re-design, the cost, the return on investment and the impacts on precursor and successor processes.

Step 2: Optimize the Business Process

Typically, a district will hone in on a handful of processes that urgently require optimization. For each process, an IDEAS analyst will work with the process owners to:

1   Document the process with a detailed flowchart; identify rework loops, bottlenecks and choke points

2   Work with the process owners to "Lean[2]" the process, eliminating rework loops, opening bottlenecks and removing choke points

3   Work with the IT team to configure the appropriate technology to implement the Leaned process

4   Document and train to the new process

5   Go back to step 1 to validate the new workflow

The process improvement effort is carefully planned to achieve three goals:
- cost reduction of 25 percent or better
- 25 percent or better reduction in paperwork and bureaucracy
- 50 percent or better increase in effectiveness

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[2] "Lean" as a discipline in the pursuit of efficiency comes from lean manufacturing, a production practice centered around creating more value with less work that seeks to eliminate waste (waste being defined as any expenditure of resources that does not create value for the end customer). When manufacturing is "leaned," quality improves while production time and cost are reduced as waste is eliminated in a continuous cycle. Like many quality initiatives, lean began as one of the cornerstones of the Toyota Production Systems and has now spread to other disciplines, notably including management and IT. "Lean IT" is emerging as a way to identify and eradicate waste in order to improve customer service, lower business costs and increase employee productivity. "Lean Accounting" aims not only to identify the financial impact of the lean improvements taking place throughout the organization, but also to use lean tools to eliminate waste from the accounting processes while maintaining thorough financial control. The ultimate goals is to eliminate both waste and errors as well as to free up capacity and speed up processes in order to provide accurate, timely and understandable information that is relevant and actionable. Maintenance of financial controls and full compliance with generally accepted accounting principles (GAAP) remains a quality imperative, as does meeting internal and external reporting requirements.

Customers and Users

Process redesign begins and ends with those who receive the output of the workflow, the "customers." The technology is always subordinate to the workflow model. The IDEAS analyst will work with district staff to define who the customers are, what they need to know and how best to deliver it. For example, a finance department has many different customers: the board, who want summary overviews; administrators with budget authority, who want real-time visibility into their budget and expenditure status; state agencies, who want periodic reporting in specific formats; etc.

Eighty percent of the time, the real users of information systems know what needs to be improved, but they don't have access to the tools or knowledge needed to put the improvements in place, nor the authority to demand improvements. Perhaps an existing in-house software tool can be re-configured to serve the purpose better, or perhaps a new tool is required. Perhaps a manual process should be replaced by an automated one, or a cumbersome software process replaced by a manual one.

The principles of usability engineering[3] are used extensively in workflow redesign to ensure that the redesign makes it easier (and therefore faster and less costly) for process owners (users) to execute the process. The international quality organization ISO defines usability as "The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use." Usability analysts asks a set of simple questions.

1   Who are the users and what tools are they already familiar with?

There is no value to replacing technology that users are already comfortable with if it does not materially improve their ability to do their jobs. If a management tool or a business process is not designed to easily and fully integrate with the user's daily work process, it will not be used and is therefore unusable/useless.

Sometimes, a tool that was thought to be appropriate is identified as being underutilized. It may not be properly configured, it may not be delivering what it promised, it may simply be too complex or too difficult to use in the context in which it has been placed. IDEAS analysts will perform a usability analysis to determine the root cause of underutilization, and assist in either reconfiguring the tool to make it more usable or identifying an appropriate replacement. Sometimes, a tool that was performing must be replaced because it has become obsolete and can no longer be maintained or integrated with other programs in the network environment it inhabits, or because the manufacturer no longer supports it. Whatever the case, IDEAS analysts will guide the search for a replacement tool by performing a full usability analysis to ensure that the tool that is selected will be fully used and will deliver the required outputs in the required form.

2   Who are the customers and what output do they need from the workflow? In what form?

Individual school districts are accountable to a bewildering number of stakeholders. They are governed by mandates legislated at both state and federal levels, and they are required to report
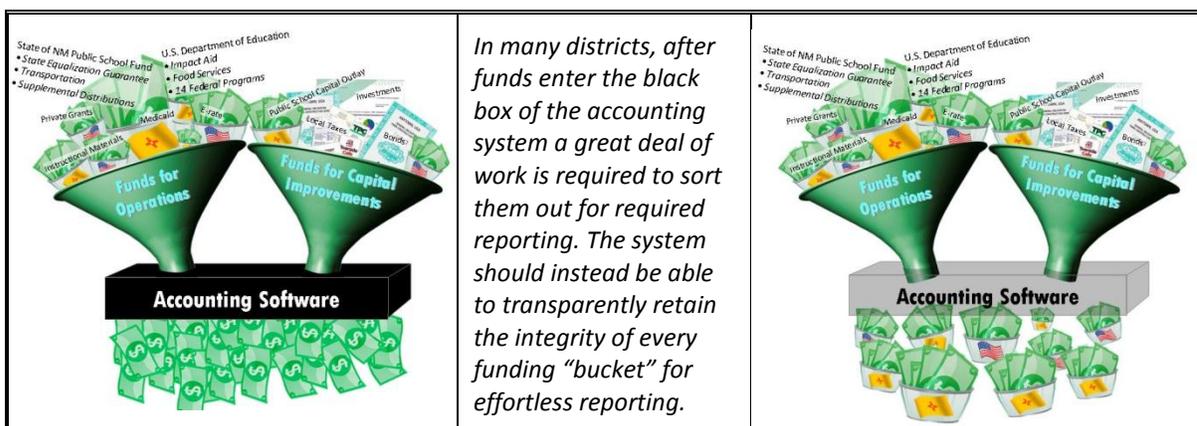
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[3] Usability engineering emerged as a distinct area of professional engineering practice in the mid- to late 1980s, when the term was used to describe the engineering of human-computer interfaces so that users could effectively and efficiently accomplish the desired tasks. Usability engineers might come from a background in Computer Science, Cognitive Science or the Psychology of Perception, Cognition or Human Factors, and today there are dedicated academic programs in Human-Computer Interaction. The term has also been extended to apply to fields other than computer programming, so that now usability is understood to refer to how well users can learn and use a product to achieve their goals and how satisfied they are with that process, as well as to how quickly and easily people can use a product to accomplish their tasks. Usability may also consider such factors as cost-effectiveness and usefulness.

compliance with those mandates to both the state education department and the US Department of Education. Within the limits of those mandates, policy for individual districts is set by a school board, elected by the taxpayers. Parents and students are the first-tier "customers" of the district, but it is also accountable to the community at large. Each of those bodies of stakeholders requires slightly information from a school district, and each in slightly different form.

Internally, teachers are both users and customers as they collect and analyze information about their students. Test scores, IEPs, portfolios, etc. are all necessary pieces of information that teachers need to better plan their lessons and teaching methodology to meet the needs of those individual students. Much of that information must also be passed on to outside customers such as the state and federal education departments. Information is passed on to other government agencies electronically, and the output of the district's workflow must meet strict criteria as to both content and format to be accepted by the corresponding system. Inaccurate or incomplete communication to funding agencies' systems can critically impact funding streams, but many districts do not have the in-house expertise to troubleshoot complex database communication issues.

Inter-communication between different systems may be the single biggest challenge facing school district information systems. Many of the "customers" of district information systems are other information systems. "Bridging" between systems is a technical challenge that many districts find difficult to meet with in-house resources. It is important that these bridges be designed and built using a rigorous project methodology that incorporates strict quality assurance so that data integrity can be easily verified and validated. It is important, too, that the architecture of the bridge be thoroughly and understandably document so that informed decisions can be made about upgrades or changes to the data source systems and so that maintenance can be performed when there are changes to the structure of the repository from which data is drawn or to which it is being sent.

Different and integrated views of information from all these systems are demanded at a summary level by senior administrators, board members, parents and community members. Frequently, we see administration staff struggling to produce multiple reports from paper output. This is a very costly inefficiency, not only because a 10 to 15 percent error rate is introduced every time information is re-entered, but because it unnecessarily consumes staff time. If the information exists in electronic format already, then a method of automatically re-formatting it, re-calculating it, re-integrating it or summarizing it for higher level reporting can be devised that does not require staff time. For those who have access to the internet, such summary reports should be available on demand to the various stakeholder communities. If paper copies must be published to reach audiences who are not connected, then the only action required of staff should be to click on a "Print report" button.

In many districts, after funds enter the black box of the accounting system a great deal of work is required to sort them out for required reporting. The system should instead be able to transparently retain the integrity of every funding "bucket" for effortless reporting.

For example, each administrator, Superintendent or board member may have five key things they need to know every morning to know if the district or their school/department is achieving its objectives. The information technology should provide those on demand in real-time. This is called a dashboard view. Just as the dashboard of your car gives you a rapidly understandable snapshot of the most important things you need to know so you can drive, a management information dashboard allows stakeholders to see immediately, on the network, the status of critical business processes or systems. They can see cumulative results at a glance and be reassured that resources are performing and are being allocated according to policy priorities without running voluminous reports in SQL from an historical database which is obsolete by the time the information becomes available. The dashboard delivers information rapidly and in a way that is easily grasped, just like the gas gauge on a car reveals at a glance whether there is sufficient fuel to drive the car.

Information should also be formatted to meet the need of the user. Principals are interested in information for their own sites, while the Superintendent first wants to see the same information for the whole district and then, perhaps, to be able to "drill down" to see that same information for each site. Board members may want to see a slightly different mix of information, and may want to "drill down" by program rather than by location. The data source for all of these reports is identical: the only difference is in how it is served up.

3   What information do users have on hand and what information do they need to acquire in order to deliver the output?

School districts "manufacture" information and knowledge. Whether they are meeting internal or external customer needs, the input is information, and the output is information. In academia, knowledge and information are power, and the tradition is to jealously guard them. Hoarding information results in miscommunication, lack of communication, inefficiency, ineffectiveness and enormous amounts of waste — but so does indiscriminate publication.

In corporate communications parlance, it is common to distinguish between information that is "pushed" and information that is "pulled." Information that is pushed out on a timetable and in a manner set by the provider of the information may or may not be received by the intended audience with any degree of attention. It is unlikely to be retained, and that is why the standard is generally to "push it out" seven times with slight variations in order to increase the probability of penetration. On the other hand, information that is "pulled" by audience members when they are focused on the topic at hand and actively seeking that information is highly likely to be retained and acted on. Teachers who try to "motivate" their students are, in corporate parlance, trying to get those students to "pull" the lesson through their own desire to get the information.

Information that is needed to prepare reports or make decisions should be available to users on a "pull" basis at any time, and it should be real time information. Having to push it out seven times, and probably more in response to individual inquiries, is an obvious inefficiency. Any management information system/information technology (MIS/IT) in use today should be able to "serve" this type of information, whether through direct read-access to the MIS/IT software or through a web interface. Many times, all that is required is to re-structure an existing report so that it can be pulled up on demand rather than printed on a periodic basis.

IT Changes

Step 3 of a business process optimization is to work with the IT team to configure the appropriate technology to implement the Leaned process. Sometimes, this means helping to configure a commercial-off-the-shelf (COTS) package with the appropriate features for the district. Sometimes it

may mean helping the district negotiate with vendors for the right software correctly configured. It may mean writing some utilities to bridge gaps between COTS products. It may mean introducing a web mash up, cloud computing based system.

Once the appropriate steps are identified, a technology change plan is developed with in-house staff. If necessary, we will assist staff in setting up a test bed where changes can be tested off-line so that there is no chance of impacting day to day business. Only after the changes have been thoroughly tested and verified will we assist in moving them to the active network. The technology change plan includes a monitoring plan that sets out ways to verify that the changes are performing as planned and that no unintended consequences are emerging.

Step 3: Documentation (Hard Copy and Electronic) and Training

Written procedures, instructions, forms or records help an organization go about its business in an orderly and structured way. Systemizing and documenting business processes ensures that nothing important is left out and that everyone is clear about who is responsible for doing what, when, how, why and where. It means that time, money and other resources are used efficiently. It means that policies are consistently carried out as intended, not just "the way it's always been done," even when there are resignations, promotions or retirements that lead to changes in staff.

School districts have several levels of policy directives that provide guidance to different staff functions. To begin with, there are the board policies, a voluminous compilation of board directives on every possible topic that constitute the legal policies of the district. Then there are the policies of regulatory and granting organizations that mandate how educational services are to be delivered. On an ongoing basis, boards ask questions and issue policy directives as resolutions or motions. All of these state objectives at a fairly high level: they tell the district **what** to do and what happens if it does not do it.

Documents, whether paper or electronic, that give more practical guidance on **how** to do things are typically processes, procedures, desk books or work instructions. Large corporations and government agencies have formal systems for developing, promulgating, revising and tracking all of these and assembling them into a procedure manual. Today, the procedure manual is slowly being replaced by an active online system that not only walks the user through the steps of the procedure but automatically verifies that they have been performed correctly — it acts as an integrated quality control system.

Most of the smaller school districts we've looked at have few written procedures and the ones that exist are often not indexed or tracked so that it's hard to know if you are looking at a current version. Staff turnover is a painful event that results in process delays, lost paperwork and added costs. Our analysts can use the material collected during the business process audit to assist in developing written or on-line procedure manuals, and a systematic process to review, update and disseminate procedures.

During our process audit, we will have developed an index of existing procedures. We'll take the process maps that have been developed for the new, "leaned" processes and assist the process owners to either edit the previous procedure or write a new one. Then we will work with the district to identify a process to make the procedures available to those who need or want to access them, to keep them updated, and to ensure that only the current version is in use. If need be, business systems can be hosted off site and managed remotely, for even greater cost savings and efficiency, returning even more money into the classroom.

Y'all have a nice day now!

Too often, consultants descend on an organization for a flurry of diagnostic activity and then smartly march away over the horizon, leaving behind a cheery goodbye and a dense volume of findings and recommendations that no one really knows how to implement. At IDEAS, we do not consider a process remediation to be complete until recommendations that the client has adopted are implemented and we have verified, through a follow up process audit, that all the users understand the optimized process and are comfortable using it. We also want to verify that the projected efficiencies have been realized and financial targets achieved. If technology changes have been made, process analysts will support in-house staff in testing, documenting, deploying and monitoring the changes to ensure that they are performing as planned.