CompleteSchool Design Features

CompleteSchool has many design features that make it superior to other solutions. Digitronics Software engineers have spent years researching the best computer solutions for the problems of schools and school districts. The first section below lists some of the features and components.   Subsequent sections give more details.

Features and Components

- Web-based cross-platform client software.
- Microsoft SQL Server database server running on Microsoft Windows.
- Scalable from one workstation to thousands of clients/servers in a large TCP/IP network.
- All data is on-line all the time (no copying data around).
- Reliable database software with two phase commits and logging.
- Auditable data. See what happened when, and who did it. Get yesterday's report today. Undo mistakes.
- Secure, server based access. Clients must go through the server to get data.
- Users can change workstations without losing settings.
- Document management reduces paper use. Users can store, view, E-Mail, or web-publish documents (reports).
- People can access the data with common tools like Microsoft Word, Microsoft Excel, and Crystal Reports.
- Cost Effective

Scalable

CompleteSchool is a complete web-based solution using Microsoft Windows servers (e.g. Windows 2000/XP/2003). Microsoft SQL Server is used as the database server software. The web-based, cross-platform, client software works with multiple operating systems, but special attention is given to Windows and Mac OS X to interact directly with applications and connected hardware. In addition, a natively compiled (.EXE) version of the client is available for Windows to improve the effeciency for those who prefer the advantages of terminal servers.

The software is highly scalable. It can run completely on one workstation, or it can run on distributed clients and servers throughout a large school district, county, or state. The server software can run on simple personal computers or complicated multi-processor RISC based computers. In addition, each of the server functions (i.e. database, web, application, report) can be distributed to multiple computers (although this probably won't be necessary). Management functions can be performed remotely.

All web clients and servers are connected by a TCP/IP (Internet standard) network. In your networked district, the information from all schools is available immediately all of the time. There is no need to copy information in the middle of the night or perform other failure prone tasks.

This is a low bandwidth solution that will not clog normal networks. First, this is a full database solution. All large data manipulations happen on the database server. Client computers are usually sent only the information that the person needs. Furthermore, client computers keep cached copies of information so the information doesn't have to be sent every time it's viewed. For example, reports and pictures are large pieces of information, but since they are cached, they can be viewed many times after being sent to a person's workstation only once.

Reliable

For the best reliability, CompleteSchool uses Microsoft SQL Server. This database engine has two features that many inferior PC databases lack. First, it uses two phase commits for transactions. Second, transactions are logged. In addition, most transactions are performed by the server, not the client. What does this mean?

Having two phase commits means that when transactions do not complete successfully, they can be rolled back. This can happen if the server loses power, the network goes down, programs have bugs, etc.

Having transactions logged means that if the database becomes corrupted because the disk drive is bad, etc. the log (usually stored on a second disk), can be used to recover everyone's work up to the moment the error occurred.

In addition to the standard logs stored by the database engine, CompleteSchool logs information in a more useful form so that changes can be audited. Using its logs, CompleteSchool can roll back time. The data appears exactly as it appeared at any given time in the past. Big mistakes can be undone. You can find out who did what, and when. Also, Digitronics Software engineers can provide better support by getting a complete picture of what has happened.

Most transactions are performed by the server, not the client. This limits the number of things that can go wrong. When client computers perform all transactions themselves, the network and every client computer is a possible source of problems that is hard to track down.

Users can move from workstation to workstation without losing their settings, and the client software can be accessed with a web browser. If a workstation breaks down, it can be replaced and put into operation immediately, and the person using it won't have to reenter all personal settings.

These features, along with some of the options they provide, increase reliability, and help to decrease system maintenance needs.

Secure

Access can be defined for screens, reports, menus, menu items, screen fields, and data tables. In addition, access can sometimes be restricted further to particular rows of data tables. For example, with special programs, people are only allowed to see the programs they have access to.

People can use many commercially available tools to access data and create reports other than those provided by Digitronics Software. However, this access is restricted to prevent improper changes to data.

All access is controlled through the server, so client workstations can only access data based on the person who is using the data. Client software does not access the database file directly. Users cannot bypass access restrictions by running programs that they have created themselves (with commonly available tools).

Note these two common problems in many other database solutions, where people can access (or destroy) the data with programs other than those supplied as part of the solution. The first one is where the client program actually needs access to the files where data is stored (for example in the Jet engine used by Microsoft Access). The second problem occurs when people having access to the data can use their password to gain the same (or more) access with other tools that do not guarantee correct usage of the data. CompleteSchool does not have these problems.

Reduces Paper Use

CompleteSchool reduces paper usage by providing Document management and other features. CompleteSchool (like most software today) comes with extensive online manuals and help, so people using the programs don't have to use paper manuals (that are seldom handy when needed). In addition, the documents (e.g. reports) created by programs can not only be previewed and printed, they can be sent in E-Mail, prepared for the Web in PDF form, or stored for any of these uses later. Reports are stored as PDF files and maintained by the system for later viewing, and they're eventually deleted automatically (unless the person who created it tagged it to be kept).

Easy to Work with

CompleteSchool provides numerous ways for people to customize the way they look at data… adjusting windows, moving table columns around, changing sort order, making adhoc queries, etc. CompleteSchool saves these preferences.

CompleteSchool allows Districts to seemlessly extend CompleteSchool capabilities (while maintaining compatibility with future releases).

CompleteSchool allows all of the data to be accessed with popular and commonly available tools like Microsoft Word, Microsoft Excel, and Crystal Reports. We know that people will want to use their data in many ways.

Cost Effective

Cost was a big factor for us here at Digitronics Software. Frankly, we've seen too many "successful" software installations that cost many times more than necessary. The CompleteSchool products are cost effective in many ways:

CompleteSchool uses inexpensive software components. Because of Microsoft's substantial discounts to school districts, SQL Server (an enterprise class database) and many other tools are available to school districts at a fraction of their normal price. Other software components were picked with a close eye on costs.

Reliable servers that are easily managed remotely, keep system and network administration costs low.

Standard, well understood technologies, keep training, staffing, and maintenance costs low.

Problems to Watch For

So far, this paper has described what CompleteSchool does. Here are some things to watch out for in other solutions:

1. Watch for pretty but clunky user interfaces. These often keep refreshing the page each time you press a button, or they lose data (without warning) if you close the window before you're done entering data, or access settings are by page so people have to look at data the District doesn't use.
2. Watch for unreliable solutions that don't support logging, auditing, two phased commits, and full data recovery. Does the system use the important data consistency checking features of the database, or does it work (poorly and unreliably) on lots of databases?
3. Watch for unsecure solutions. Does the solution let users go around the system and access data in ways they shouldn't? Does the database enforce rules? Try deleting a database file from a user workstation, or try running a tool like Microsoft Access, type in the user name and password, and see what kinds of undesirable changes can be made (but make a backup of your data first).