

A close-up, slightly angled view of a computer monitor. The screen is black and displays white text. The monitor's bezel and a portion of the desk are visible in the foreground, which are out of focus.

Converting Intellectual Capital into Competitive Advantage

by Jay Cross,
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Success in the knowledge age requires new tools. This paper describes a unified approach to creating, maintaining, and exploiting intellectual capital, the knowledge platform. The objective is to deliver the right information at the right time to the right person, simply, economically, and immediately.

Capitalizing on Intellectual Capital

In a world that competes on knowledge, what a company knows is its competitive advantage. How odd, then, that few companies protect their intellectual capital from decay and degradation. Organizations often leave their knowledge assets scattered around, unprotected, and often impossible to find when needed. Even more surprising, most leave the fate of their most valuable assets to chance.

Organizations will never preserve their intellectual capital unless they make it explicit. This is easier said than done. Numerous attempts at creating a giant database of corporate knowledge have crumbled under their own weight.

How does an organization learn to pick the right stuff and discard the rest? At this point, experience is the only teacher. In the conclusion to this paper, I'll name one firm that has worked with companies in the real world of selling and customer service, identifying and tagging their relevant knowledge and converting it into electronic form. Today they work with new clients, nurturing their ability to select and document vital information and then weaning the clients to take over the function on their own. They "get it."

Decisions about knowledge have migrated to the top

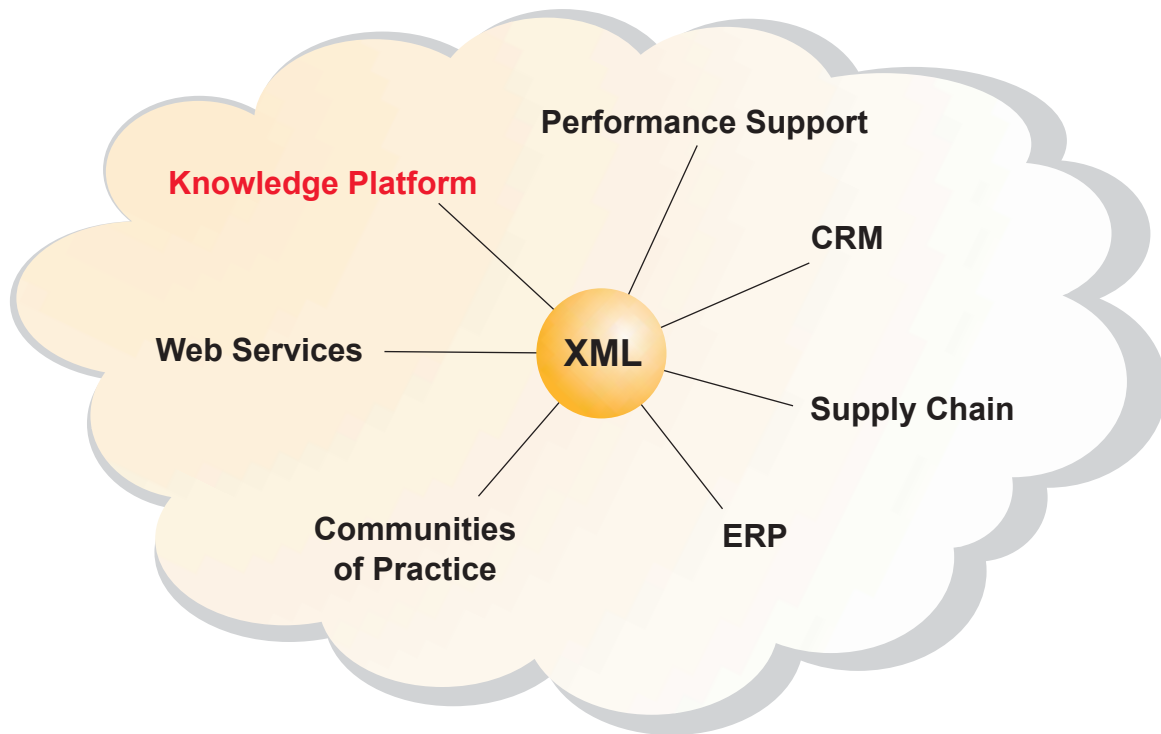
As eLearning became more established, line managers began using it to accomplish business objectives. They mobilized eLearning initiatives to accelerate product rollouts, build the skills of customer service reps and sales staff, certify compliance with regulations, and educate customers. Many line managers decided that training was too important to leave in the hands of the training departments.

For learning to have an impact and keep pace with business, it requires the attention of functional management. Senior executives have started to consider eLearning and knowledge management as strategic tools to develop and maintain competitive advantage. C-level officers recognize the growing importance of having a nimble organization that can adapt to new conditions at a moment's notice.

¹ We'll use the term intellectual capital as shorthand for what an organization knows. This is people's working knowledge of their customers, services, and internal processes -- the sum of the intangibles that people carry around in their heads. Intellectual capital is the content employees must learn in order to be successful.

Enterprise-wide today, global connectivity tomorrow

In the networked corporation, everything is inevitably linked to everything else. Optimal coordination calls for nothing less than the convergence of all major functional areas. And even today we are witnessing the beginnings of web services that link what goes on inside the organization to the greater world outside.



This integration of a corporation's digital information into one interactive system will empower the next-generation Knowledge Platform, where information resources will become part of the workflow. Imagine a context-sensitive dashboard on every knowledge worker's desktop. Rather than dealing with after-the-fact performance measures, process information will be available in real time. Built-in business logics will link one worker's viewpoint to the next. A continuously aware workforce will be able to act and react to the most current information. Training as we have known it will fall by the wayside, replaced by different levels of proficiency in performing real work.

To work in conjunction with an organization's other enterprise systems, a Knowledge Platform must conform to the standards and direction of the in-house IT organization. This means no rogue applications, no proprietary interfaces, no oddball systems architecture, and overall, no surprises. The Knowledge Platform must be "well-behaved" within its community of enterprise apps. In today's IT space, this means compliance with Java Enterprise Edition ("J2EE") unless one is willing to accept the lack of security in other environments.

Future-proofing your intellectual capital

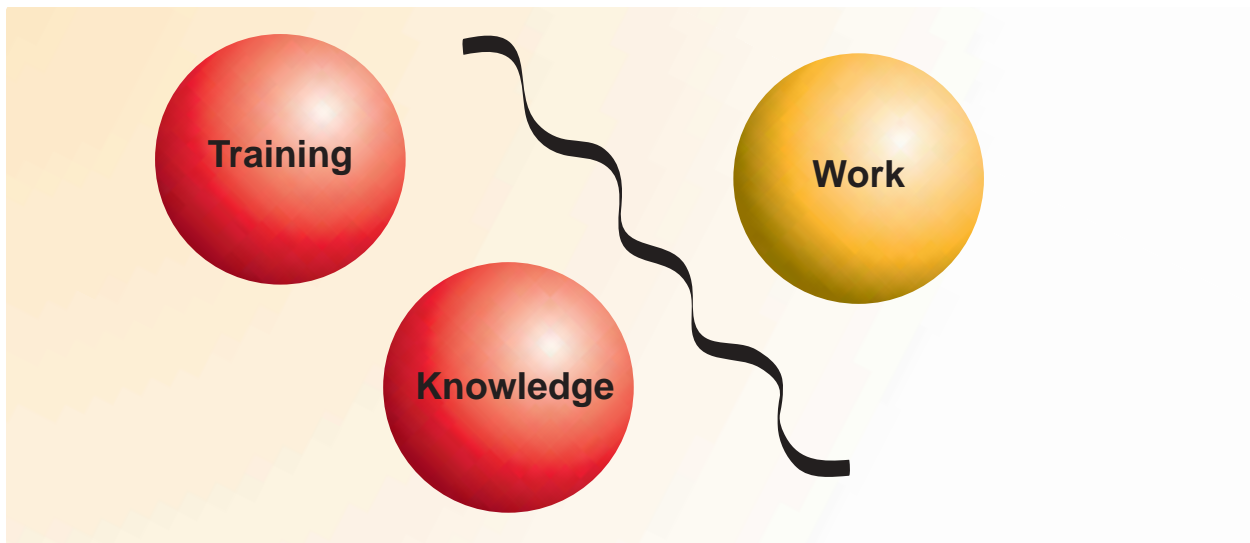
You already know about the loss of intellectual capital that occurs when an experienced member of your team walks out the door. Consider another source of loss: technological obsolescence. Y2K brought a lot of mission-critical COBOL programs out of the closet, but it didn't unearth untold processes and know-how decomposing in off-site storage facilities, forgotten file drawers, and training programs on obsolete media.

Companies that store information in word-processed documents, spreadsheets, training produced by proprietary authoring systems, videos, and magnetic media are at risk of losing massive chunks of knowledge. How long since you've seen a 5" floppy? A dBase programmer?

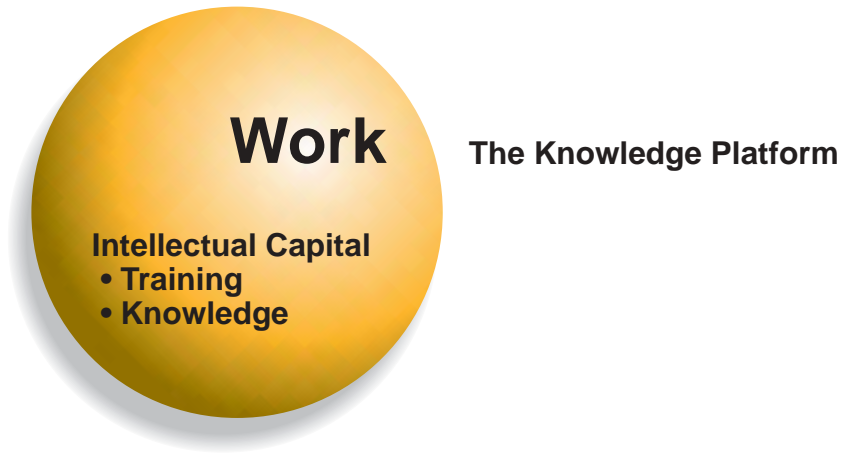
The only way to future-proof intellectual capital is to maintain it in a flexible, universal standard such as XML. Structuring 100% of the organization's intellectual capital in XML builds in the flexibility to move to any future environment, because the XML environment itself can morph to meet future requirements.

The integration of work and learning

Until the convergence of network technologies, standards for labelling information, and ubiquitous computer access, intellectual capital was tough to keep track of and to retrieve. This made it challenging to integrate intellectual capital into work.



Learning and knowledge exist only to improve work. They have no independent existence. It is time for forward-looking organizations to reject the old paradigm and accept nothing less than the full integration of intellectual capital and work.



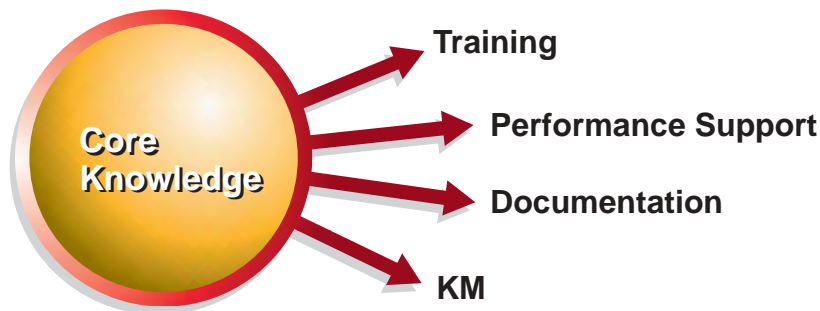
Picture a single system that puts all mission-critical information at the fingertips of every knowledge worker in the organization. We'll call this a "Knowledge Platform." It is a treasure chest of current corporate intellectual capital. The knowledge platform is "intelligent," able to present information in the optimal form for the user, be it training, reference material or performance support:

- for one learner, a lesson and drill on selling the XD505
- for another, a quick brush-up before a sales call on the XD505
- for the help desk, the electrical specs for the XD505
- for a marketer, video interviews with satisfied XD505 customers
- for a sales rep, XD505 prices displayed on a Palm device

The knowledge objects at the heart of the Knowledge Platform assume different shapes, depending on the context in which they are presented. Using the same core knowledge objects to support previously disparate systems eliminates duplication of effort and the rigors of synchronization. In sum, the Knowledge Platform replaces this:



with this:



When knowledge is modified, supplemented, or made obsolete, the change need be made only at the core level.

Real learning

How do people learn to become proficient in their jobs? Extensive research by The Institute for Research on Learning found that formal learning (courses and workshops) are the source of at most 20% of the learning taking place in corporations. Real learning is informal. It is learning through trial-and-error, asking the person in the next cubicle, or calling the help desk.

Where do most corporations invest their training dollar? In the formal learning that accounts for at most 20% of what's learned. They apply the 80/20 rule in reverse, investing most in the area with the least impact. Worse yet, most of those dollars aren't put into what people need to know – how to do the job here, in our company. Rather, the courses often focus on watered-down, "generic" subject like "Negotiating Skills" or "Managing Teams."

A knowledge platform facilitates informal learning. If someone needs one small scrap of information, they can easily look up that one item. Rather than passing along garbled information, anyone can go directly back to the source.

The ideal time to learn is in the course of solving a problem. A worker needs to understand how something works to fulfil a customer request. He or she looks it up at that moment. No need to take a warm-up, an explanation of theory, or a discussion of historical precedents. People just need the facts to do the job. This response-driven learning is ten times faster than traditional means and is also more likely to stick.

Accelerate or die

The tempo of business today and forevermore is Internet time. Everything is speeding up. Product life cycles are blurring into continuous product improvement. Decision-making operates in parallel with operations. Customers demand immediate answers. Sluggish organizations disappear.

The issue in the accelerating frenzy of conducting business is not when an organization will be forced to adopt the Knowledge Platform approach so much as when the organizations conducting business as usual will disappear from the scene. Those who do not begin constructing a long-term knowledge infrastructure will soon find themselves too far off the pace to catch up.

Consider the impact on sales within an organization. A VP of Sales needs to add 30 new reps within the next six months and achieve \$200 million in revenue in the next twelve.

- Using traditional means of getting a new sales team up and running would have required multiple training sessions as new hires came on line – or holding people back until a substantial number were on board. What a choice – a fistful of airline tickets and the expense of several fulltime trainers or new hires sitting on their hands until an entire class could be put together.

- More serious is the problem that cram sessions are not the optimal way to get new hires up to speed. Research finds that people forget half of what they learn in a workshop if they don't apply it within two days. The result? New hires only become competent after lengthy trial-and-error on the job.
- With a Knowledge Platform, new hires start receiving product and market information in small doses their first day on the job. They attend workshops to build relationships, participate in problem-solving sessions, and learn to access and contribute to the firm's intellectual capital, not to memorize product features and sales scripts.
- After the workshop, the sales force can access product benefits, pricing information, customer cases and the like from the knowledgebase when they need them. Since this is the sole source of sales information, it is always current.
- Companies have used the Knowledge Platform approach to cut the time required to bring a sales person to full-quota productivity in half. This is equivalent to doubling the number of FTE feet on the street and is perhaps the only way for the V.P. of sales to meet her stretch goal.

Consider the impact at the typical Help Desk. Turnover amongst customer service reps (CSRs) is outrageously high, about 300%. Product specs and entire product lines are continuously changing. Products are also becoming more complex and come with service components – multiplying the types of questions to which a customer service rep must respond.

- The traditional response is sink-or-swim, aided and abetted with a few days of generic training at the front-end and Q&A in the coffee room with people on the job for at least six months. New products? Read the memo, hear what's going on over lunch, and start answering questions on the phone.
- With a Knowledge Platform, CSRs gain proficiency over time instead of all upfront. Learning an hour a day is twice as productive as learning eight hours a day. New product information is available both in brief introductory demonstrations and learning sessions and as rapid recall to answer caller queries.

Consider the impact on rolling out an ERP solution. CFOs know that the cost of an ERP software license is only the beginning of a long and tortuous process.

- Traditionally, the implementation process is so complex and overpowering that outside consultants are brought in at high cost to manage the conversion process. They plan and code but it's difficult to monitor their progress and transferring their knowledge to the organization is cumbersome.
- A Knowledge Platform keeps everyone reading from the same page. A flurry of emails, memos, and documentation is replaced by a single knowledge repository. Version control ceases to be an issue.
- Implementers learn what they need to know when they need to know it. They focus on their company's ERP, not ERP systems in general. They access knowledge when they need to know it. They have a single source of reference information. They insure they are prepared as go-live date approaches.

Summary

The Knowledge Platform works within enterprise software environments and provides the potential to rival ERP and CRM. Many vendors are working on pieces of the puzzle, but I am aware of only one company that has a Knowledge Platform application up and running, Avaltus.

Avaltus has an advantage over training companies, LMS providers, and traditional content management players – five years of building Knowledge Platforms for the likes of Hilton Hotels, PRC, Unilever, and the Defense Commissary Agency. The Avaltus team was converting their customers' legacy content into extensible knowledgebases long before today's LCMS providers were born.

The Avaltus product is shipping today. It is a complete, functioning enterprise system, built to scale and easily integrate into other systems. More information is available at www.avaltus.com.

FAQ

In a nutshell, what's a Knowledge Platform?

- Learning Management System (LMS) +
- Learning Content Management System (LCMS) +
- Knowledge Management System (KM) +
- Electronic Performance Support System (EPSS)

LMS + LCMS + KM + EPSS = Knowledge Platform

Is the Knowledge Platform a "learning content management system (LCMS)?"

- A Knowledge Platform is an LCMS on steroids. Like an LCMS, it assembles grains of content and delivers them to learners
- Unlike an LCMS, a Knowledge Platform delivers not only training programs, but also just-in-time reference information and performance support – the entire intellectual capital of the firm
- A Knowledge Platform is 100% pure XML. This guarantees seamless migration to future data stores and knowledge environments.

What should a corporation seek in a Knowledge Platform vendor/partner?

- Track record of converting old-style, dispersed intellectual capital into user-friendly, future-proofed knowledge bases
- Background in change management and solving business problems as well as IT
- Deep pockets and financial durability

What are the minimum IT specs for a Knowledge Platform?

- Pure XML, divorcing content from presentation
- Non-proprietary and platform agnostic
- Enterprise middleware, e.g. J2EE
- Compliance with SCORM
- Non-programmers can author content

Glossary

Internet time. The accelerated timeframe of the new economy brought on by eBusiness and the Internet. A year of Internet time may equal seven years of calendar time. Or more. Or less.

J2EE. The Java™ 2 Platform, Enterprise Edition (J2EE) is a standard for developing multi-tier enterprise applications. J2EE simplifies enterprise applications by basing them on standardized, modular components, by providing a complete set of services to those components, and by handling many details of application behavior automatically, without complex programming. J2EE's advantages include simplicity, portability, scalability and legacy integration. Developed by Sun Microsystems, J2EE is becoming a standard for enterprise computing.

Knowledge management is an over-used and wishy-washy term for creating and sharing know-how. Most vendors define KM as "whatever I want to sell you," be it document-tracking or warehousing good ideas or building Web pages or reinforcing innovation.

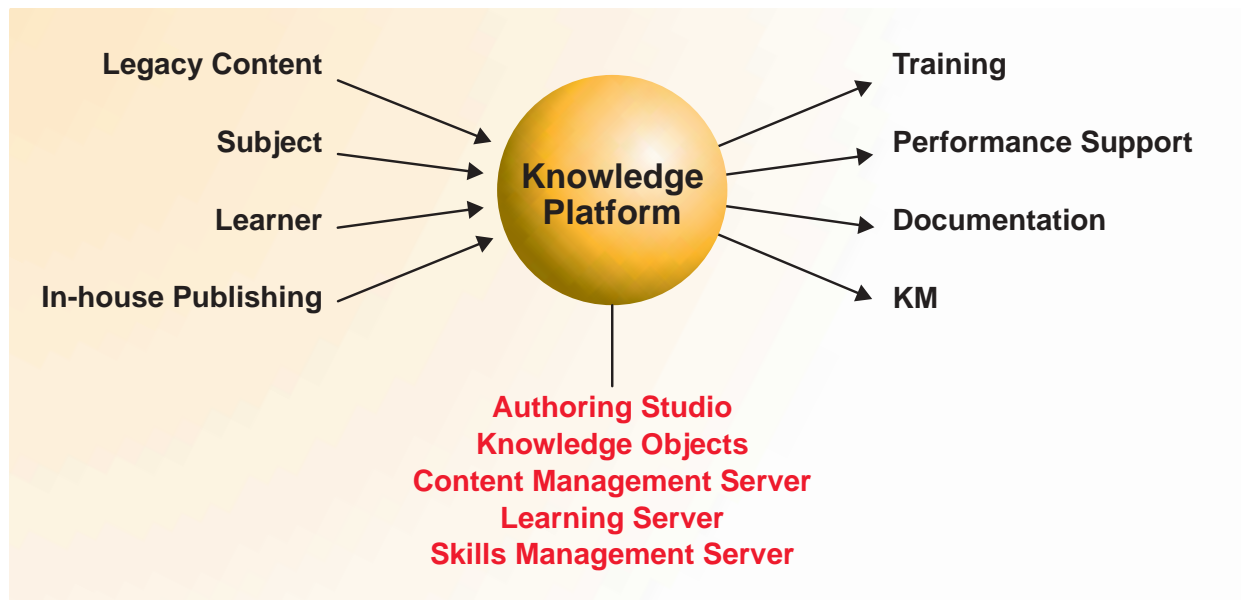
Knowledge is like the sound of the tree that falls in the forest when no one is there: it doesn't exist unless people interact with it. Nurturing innovation and rewarding the sharing of ideas fertilizes seedling ideas. Setting up processes to highlight what's worthy and weed out useless undergrowth help grow healthy trees.

Knowledge Platform. An enterprise approach to creating, maintaining, sharing, and growing its in-house know-how, proprietary systems, and useful corporate information.

A Knowledge Platform is a superset of the functions of a Learning Management System (LMS), a Learning Content Management System (LCMS), and a real-time Performance Support System (EPSS). Typical components include:

- User-friendly tools for converting existing presentations, training programs, and documentation into easily indexed, machine searchable form
- A process for capturing new intellectual capital at its source, often the desktop of a researcher or practitioner
- A unified, enterprise-wide repository of up-to-the-second information (no more silos, no more file cabinets chock full of out-of-date materials)
- A single, authoritative source of information for training, answering questions, and guiding projects.
- Methods for retrieving just what you need to know, just when you need it
- A built-in ability to migrate the information to other repositories or standards as future conditions change

Functionally, a Knowledge Platform looks something like this:



LMS or Learning management system. eLearning infrastructure. At the simplest level, a tracking system. LMS's range from simple course-by-course registration systems to huge databases that deal with personalization, learning prescriptions, and job competencies.

LCMS. Learning content management system. An LCMS is a multi-user environment where learning developers can create, store, reuse, manage, and deliver digital learning content from a central object repository.

Metadata. Information about information. Often, "metatags" describe what's inside a chunk of learning. Generally machine-readable. Analogous to a barcode on an incoming shipment.

Paradigm drag. When old thinking holds back new. From David Gelernter's *Machine Beauty: Elegance and the Heart of Technology*. See Knowledge Management.

SCORM. Sharable Content Object Reference Model. SCORM is the Federal government's initiative to make learning objects and systems from various sources seamlessly interoperable. Built on the prior work of AICC, IMS, the IEEE, and others, SCORM is widely expected to set the standard that everyone must comply with.

Shelf-life. Knowledge is perishable. Some suggest it be labeled with pull-dates, like cartons of milk.

XML. “eXtensible Mark-Up Language.” A standard for describing the content of online information, in contrast to HTML, which defines the presentation of online information. XML facilitates the transfer of information from one computer to another. Think of it as a Rosetta stone for translating content into machine-readable form.

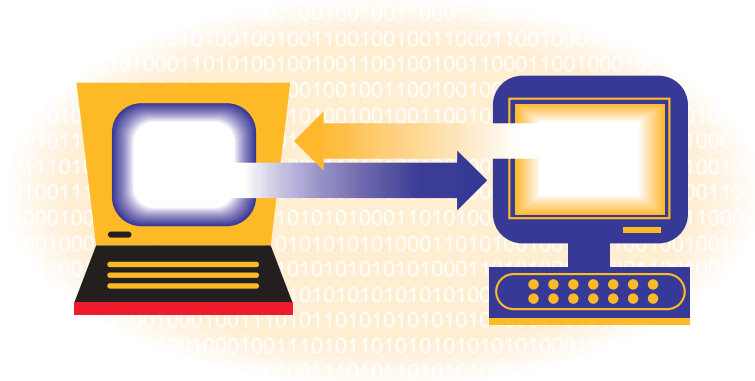
Without XML, human beings get in the way when moving documents among computers. People have to intervene to assess whether an incoming document is an invoice, a payment, a customer inquiry, or an order. Typically, a computer or network processes information in a tiny fraction of a second, and the person takes minutes or hours or days to check it out and pass it on.

XML cuts out the middleman. Metatags define what’s what in a uniform way. An incoming document could contain metadata that says,

This is an invoice
It is dated 2/2/01.
It is from XYZ Corporation.
Reference your purchase order 1234.
The amount due is \$3,395.
Terms are 2 10 net thirty.
...and so on.

In practice, this is more likely to look like:

```
<meta doc type="invoice">  
<meta date prepared>02022001</date prepared>  
...and so on
```



The benefit of XML is getting computers to talk with one another. XML is the backbone of SCORM and a category you’re going to hear a lot more about this year: Web services.

In a Knowledge Platform, coding every learning object in XML makes it possible to retrieve up-to-date information in real time, in the format you want to see it in.

Links

Information	Source	URL
Knowledge Platforms	Avaltus	http://www.avaltus.com
J2EE	Sun Microsystems	http://java.sun.com/j2ee/overview.html
XML	O'Reilly XML.com	http://www.xml.com
SCORM	ADL Co-Lab	
eLearning	Internet Time Group	http://www.internettime.com

Author Bio

Jay Cross has been passionate about harnessing technology to improve adult learning for over twenty years. He designed the University of Phoenix's first business degree program. He took a training start-up to national prominence, capturing 80% market share and training a million professionals to make sound decisions and sell services. A self-described "Web fanatic," he has been marrying training to the Net since 1996.

Jay founded Internet Time Group in early 1998 to help organizations learn. Internet Time Group provides hands-on advice on implementing eLearning, developing information architecture, advising management, and accelerating sales. Jay is CEO of eLearning Forum, a 750-member think tank and advocacy group in Silicon Valley. He is a graduate of Princeton University and Harvard Business School.