There are only two families in the world, the Haves and Have-Nots.

—Miguel de Cervantes (1547–1616)

The Digital Divide

By now we've all heard about

In July 1995, the U.S. Commerce Department's National Telecommunications and Information Administration (NITA) released the first report in its *Falling through the Net* series analyzing telephone, computer, and modem/online-access penetration rates throughout the United States and identifying several categories of information have-nots. By July 1999, the issue date for the third report, *Falling through the Net: Defining the Digital Divide*, the NITA stated that access to computers and the Internet had "soared for people in all demographic groups and geographic locations." The report added, however, that the digital divide between the information rich and the information poor not only had persisted but actually had widened for many groups.

In the meantime, numerous questions have been raised. To begin with, is there truly a divide at all? Is the divide simply an imagined gap created by the manipulation of statistics representing a frozen point in time? If there is a divide, what is the dividing line: race? age? education level? rural or urban residence? U.S. regional residence? single-parent vs. two-parent household? simple desire and/or interest? Or are there perhaps *many* divides—in Internet access, in use of access, in ownership of computers, in overall computer technology skills?

To help answer these questions, *EDUCAUSE Review* turned to a logical source: think tanks. In the following two articles, writers from the Cato Institute and the Benton Foundation offer their perspectives on the digital divide, as well as their ideas on what the issue might mean for higher education. Their views may help us answer a final question: Was Cervantes right?

BY ANDY CARVIN

More than just Access

Fitting Literacy and Content into the Digital Divide Equation

PHOTOGRAPHY BY WELTON DOBY

Over the course of the last several years, politicians and citizens alike have grappled with the public policy issue commonly known as the digital divide. In today's digital economy, the question of whether or not people have access to information technology is no small matter. By the year 2006, according to the U.S. Department of Commerce, 50 percent of all U.S. jobs will be in the IT sector or will require IT skills. Today, high-tech workers make 78 percent more money than the overall working population.[1] In schools, even though our nation has started the process of connecting every classroom and library to the Internet, only one-third of U.S. educators feel they have the skills to integrate technology into their teaching, and most school districts commit only one-tenth of the recommended funding toward edtech-related professional development. In the political sphere, the Internet can be a tool of empowerment for citizens, allowing them both the ability to collect the information they need to make well-informed decisions and the opportunity to articulate their views in an open, public space.

Our economy, our education, and our democracy are but three of the many reasons we need to bridge the digital divide. To do so, we have already recognized the need for better Internet access. Too many citizens are unable to access digital technology when they need it and where they need it. But we must also recognize the need for literacy: people need a broad spectrum of literacy skills in order to utilize IT effectively. And we must recognize the need for content: individuals and communities require a diversity of relevant, high-quality information—and the ability to create their own information—in order to become well-informed, publicly active citizens. By tackling literacy and content problems in conjunction with current attempts to improve Internet access, communities can make sound policy decisions and forge strategic alliances for narrowing the digital divide.

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LITERACY AND THE DIGITAL DIVIDE

It would be easy to pretend that the literacy issue simply boils down to promoting technological literacy. In other words, does everyone have the skills needed to use computers and other information tools effectively? Yet the specter of illiteracy can be overcome only by cultivating a broad spectrum of skills. When considered individually, many of these skills may not seem directly connected to the divide. Taken as a whole, though, they compose an arsenal we can use to narrow the digital divide:

- *Basic Literacy:* Can I read and write?
- *Functional Literacy:* Can I put my reading and writing skills to daily use?
- *Occupational Literacy:* Do I know the basics of working in a business environment?
- *Technological Literacy:* Can I use common IT tools effectively?
- *Information Literacy:* Can I discern the quality of content?
- *Adaptive Literacy:* Can I develop new skills along the way?

Basic Literacy

In the United States, basic literacy has always been high, yet we continue to struggle to introduce basic reading and writing skills to young people, especially when their parents also suffer from basic illiteracy. Despite our efforts to make the Internet a true multimedia experience, the vast majority of online content is text-based. Such content is useless if people do not have the skills to read it. And even in the cases where we've begun to develop compelling streaming audiovisual content that could be used to overcome literacy barriers, the irony is that the people who could most benefit from it—the less-educated, lower-income families—are the least likely to be able to afford the high-speed Internet access required to utilize it.

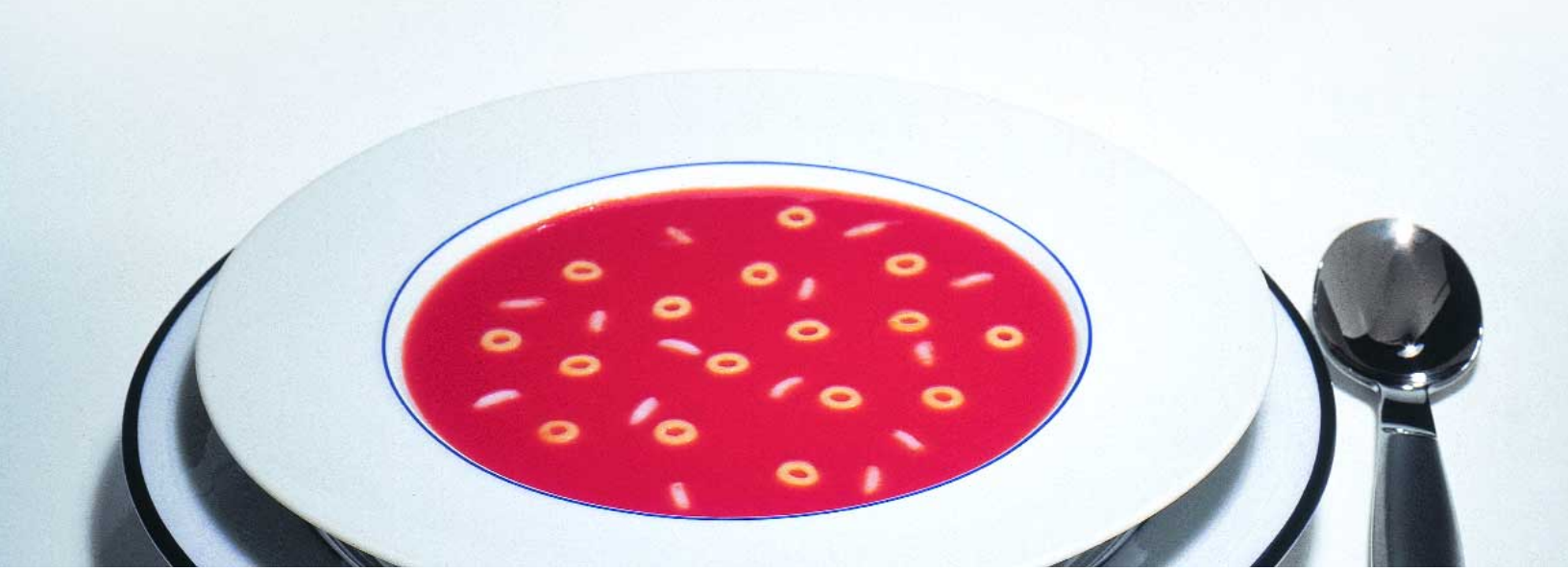
In 1997 President Bill Clinton called for the development of a grass-roots national strategy, the America Reads Challenge, to combat basic illiteracy. Through this program, literacy volunteers—college students from 1,100 universities—have helped over two million students improve their reading and writing skills. The federal government currently spends $260 million each year to combat illiteracy.[2] What can be done to leverage these efforts with preexisting digital divide programs? For example, how can Community Technology Centers, which offer free Net access and IT skills training, partner with local literacy programs to offer a greater range of learning opportunities?

Functional Literacy

In many ways, functional literacy is the secret shame of American education. Although the vast majority of U.S. adults are considered basically literate, the U.S. Department of Education reports that nearly one in four adults is functionally illiterate.[3] Adults suffering from functional illiteracy lack the ability to apply their basic literacy skills to daily activities such as filling out forms, reading traffic signs, balancing checkbooks, or completing job applications. Adults, as well as young people, must learn how to put their basic reading and writing skills into context and how to utilize their skills on an ongoing basis in order to develop functional fluency.

Occupational Literacy

As has been demonstrated in successful welfare-to-work programs, those going into the workforce for the first time must become well acquainted with basic professional skills. These "soft skills," as they are sometimes called, are tantamount to developing a personal work ethic: going to work on time, dressing for the business environment, learning to engage with work peers. On the surface, these skills may seem like they have nothing to do with solving the digital divide problem. However, if one of our goals is to give people the skills to use IT effectively in order to improve their economic standing, they must also master the skills necessary for participating in the workforce. Successful IT training programs such as



Cityskills.org acknowledge the importance of occupational literacy by including this type of training alongside advanced IT training. Gaining skills as a certified network administrator, for example, doesn't mean much if you have no idea how to act in an office environment.

Technological Literacy

Easily the most recognized literacy skill in digital divide discussions, technological literacy is the ability to utilize common IT tools, including hardware, software, and Internet tools like search engines. Gaining technological literacy is often difficult even for the well-educated, since it involves breaking old work habits and developing new ones. Ford Motor Company recently recognized the importance of improving the technological literacy of its workforce. With the Internet now being used for customer service and e-commerce, among many other uses, Ford decided to give free PCs and low-cost Internet access to all of its workers. By encouraging individual employees to sharpen their technological literacy skills, Ford hopes to improve the skill set of its entire workforce, allowing the company to remain competitive in a changing digital economy.[4]

In K–12 education, technological literacy is an enormous issue: teachers are simply not prepared to use technology effectively in the classroom. In a recent Department of Education survey, two out of three teachers stated that they weren't comfortable using IT. Teachers receive, on average, less than 13 hours of technical training per year, and 40 percent of all teachers have never received any kind of IT professional development. Though experts recommend that schools commit 30 percent of their IT budgets to training, the national average is only 3 percent. Research from the University of California at Irvine's Teaching, Learning, and Computing Study suggests that teachers who are generally uncomfortable initiating interactive, constructivist engagement with their students are also uncomfortable using computers for teaching.[5] To help solve this problem, the federal government has developed the PT3 program to prepare preservice teachers for using technology, and recently the Clinton administration proposed to double the PT3 budget, from $75 to $150 million per year. Yet despite the need for preservice training, Congress has instead slashed the PT3 budget for fiscal 2001.

Information Literacy

Whenever we find a particular piece of information, whether on the Web or on a bookshelf, we need the skills to ascertain its veracity, reliability, bias, timeliness, and context. The Internet especially offers countless opportunities to deceive and manipulate online users. Even though millions of Web sites have been developed with sincerity and honesty, it is human nature for free speech to reflect personal agendas. Users must have the skills to put content into context.

For example, a June 2000 study by the Pew Center for the People and the Press noted an intriguing trend among consumers of news media. In general, users put greater trust in online news sources than in print or broadcast news sources—even when the producer of both the online and the offline news was the same.[6] Despite the disturbing trend of companies that profile Internet users without their permission, surveys strongly suggest that the average citizen would prefer companies to self-regulate their online activities rather than have the government impose regulation. Regardless of Internet regulation, individuals need to be able to gauge the quality of online information themselves. Developing fluency in information literacy is the only way to do that.

Adaptive Literacy

Although not universally seen as a type of literacy in a traditional sense, adaptive literacy is the willingness to learn new tools and to apply previous learning to new situations. With the development of new technologies and the obsolescence of not-so-old technologies occurring at a dizzying pace, the key to succeeding in any environment that utilizes IT is the ability to develop adaptive literacy skills.

In day-to-day activities, such learning opportunities are usually incremental—from one type of PC to another or from one brand of e-mail browser to another. The development of entirely new tools, however, forces us to make quantum adaptations in the way we learn and work. For example, even though the Internet has been a public phenomenon since the mid-1990s, Internet users and online publishers are still sorting out how to use the medium most effectively. Meanwhile, other potential information revolutions—digital television and wireless PDAs, for example—are breathing down our necks. Adaptive literacy, therefore, is a skill gained not just by individuals but also by

communities, institutions, industries, and nations. Groups and individuals adopt technologies at different speeds, yet we must all take a certain amount of time to apply the technology of one tool effectively before moving on to the next new tool.

CONTENT AND THE DIGITAL DIVIDE

The true power of the Internet is derived from the content that travels through it. The Internet now contains literally tens of millions of pages of information. Thus, on the surface it may seem somewhat disingenuous to suggest that we are suffering from a content divide. But it takes only a little prying to discover the glaring information gaps currently existing in cyberspace.

In March 2000, the Children's Partnership released the first major study of content issues in the digital divide.[7] This research identified four specific "barrier" areas—areas in which content is severely lacking for many communities: local information barriers; literacy barriers; language barriers; and cultural diversity barriers. In addition, a fifth area must also be addressed: accessibility barriers.

Local Information Barriers

The Internet has been quite successful in developing community-related content for large metropolitan areas. Commercial ventures such as CitySearch, Digital Cities, and other dot-coms have invested in commercial community networks offering information, for example, on local activities, businesses, and schools in large cities. Such services also often provide discussion forums for local residents, providing an environment for community debate. Unfortunately, commercial community networks have not scaled downward to smaller communities, since their businesses require a minimum critical mass of local users and potential advertising revenue to justify entry into a community. Nonprofit community networks must fill the gap, and in communities with a solid base of technology-savvy citizens and the proper technological infrastructure, these networks often succeed. However, the overhead required to maintain the networks and the lack of sustainable revenue often make it difficult for these nonprofits to flourish in the long run.

Some online services provide community content through online city directories—generic virtual templates that can be used to organize and promote local online content. Yahoo!, for example, offers Yahoo! Get Local (<http://local.yahoo.com>), a collection of online directories representing thousands of communities across the United States. Each community's listing includes an archive of known Web sites in that community. For example, Indialantic, Florida, with a population of less than 3,000, has not merited the attention of a full-fledged community network, but because the town contains numerous businesses, schools, and people that maintain Web sites, Indialantic has a listing in Yahoo! Get Local.

With an increasing number of non-college-educated users now going online, it has become necessary to consider "literacy accessibility." The federal government, for example, is required to ensure that all government content is accessible to a limited-literacy audience.

Although such services are a useful way of organizing preexisting local online content, they offer neither increased online capacity nor a forum for community action. Several new online services may help bridge the content gap for small communities. Out2.com provides a generic community newspaper template for over 10,000 U.S. communities, including thousands of small towns. The citizens of these towns are then able to use the template for free to generate local online bulletin-board services. Essentially, Out2.com provides the capacity for content-building, and the community provides the context. Such services could serve as a model for allowing residents to create relevant community content without having to invest in a full-size community network service.

Literacy Barriers

The Internet's origins lie in academia: there was a time when researchers and graduate students produced the lion's share of online content. Over time, of course, the Internet has become much more mainstream, with millions of people going online and millions more expressing interest in going online. Yet despite the changing educational demographics of the Internet, much of the content available online is written for a well-educated audience. And since the bulk of online users are college-educated, content is written to cater to their particular literacy level. However, with an increasing number of non-college-educated users now going online, it has become necessary to consider "literacy accessibility." The federal government, for example, is required to ensure that all government content is accessible to a limited-literacy audience. Although other online services are not required to meet such guidelines, producers of online content must become more sensitive to the information needs of users with limited literacy skills. For now, this means authoring text in ways that are easily understood. As streaming media improves in quality and affordability, audiovisual Web-casting will offer new ways in which to communicate with low-literacy audiences.

Language Barriers

As of the year 2000, only a small handful of nations are not connected to the Internet. From China to Vatican City, countries large and small are embracing the Internet's potential. A casual stroll through cyberspace, however, might suggest otherwise: English-language content on the Web heavily predominates. According to a recent study by the Internet company Vilaweb, based in Spain, over 68 percent of Internet content was in English, with 3.87 percent in Chinese, 2.96 in French, and 2.42 percent in Spanish. Other widely spoken languages barely registered in the study. Arabic, for example, composed only .04 percent of all Web sites.[8] While the number of non-English sites is growing, it's not keeping pace with the number of non-English speakers who are trying to go online and take advantage of cyberspace. In July 2000, world leaders at the G-8 summit in Okinawa agreed to focus more resources on improving Internet access around the world. But if the number of non-English Web sites does not grow with that access, millions around the world will be unable to take advantage of the Internet-access opportunities.

Cultural Diversity Barriers

Related to the issue of language is the lack of cultural diversity in cyberspace. According to the Net survey firm PC Data Online, the average Internet user is thirty-three years old, white, with a college background, and earns $67,000 per year. Even though the Net has become more affordable to millions of users, in terms of content it is still a white, upper-middle-class experience. Some demographic groups are beginning to make important strides, however: a recent study by Cheskin Research suggests that Latinos are making significant progress online.[9] Businesses such as QuePasa.com and NetforAll.com are recognizing the potential of the expanding Latino market and are providing content of interest to that community. Will the marketplace support the content needs of all minority communities? Probably not. For example, Latino communities differ considerably. A tenth-generation Spanish family in New Mexico, a third-generation Cuban-American family in Tampa, and a first-generation family of Guatamalan migrant workers in the Pacific Northwest will all have different content needs and expectations.

Accessibility Barriers

Lastly, we need to address the content needs of the disabled community. The majority of Americans will experience a temporary or permanent disability at some point in their lives, and simply in terms of employment opportunities, having a disability can be a severe obstacle. Despite our nation's current record level of employment, nearly 60 percent of people with visual disabilities and 40 percent of people with hearing disabilities are unemployed. According to a March 2000 report from the Disability Statistics Center, only one-quarter of the working disabled have a computer at home, and less than half of these people have Internet access.[10] The development of software that assists the dis-

abled when accessing Internet content has long lagged behind overall Web site development; as a result, millions of sites use technologies that are totally inaccessible to the disabled. Although groups such as the CPB/WGBH National Center for Accessible Media and the World Wide Web Consortium's Web Accessibility Initiative are pioneering standards for Web site accessibility, very few sites have implemented their recommendations, leaving an entire segment of our society barred from accessing the Internet and the content it has to offer. Cyberspace has led to a revolution in American prosperity, but that prosperity has yet to affect the majority of people with disabilities.

CONCLUSION

Assuming that we as a society are determined to bridge the digital divide, we must develop policies that tackle the issue as comprehensively as possible. Expanding Internet access has been a very important first step, but it will be difficult to proceed further without addressing the issues of literacy and content as well. Here in the United States, we must better leverage current literacy programs to interface with Internet-access programs, and we must find new opportunities to encourage the expansion of public-interest content. Internationally, the digital divide is fast becoming an important issue as well, especially in developing countries, where the need for improved literacy and information sources is also mandatory if any progress is to be made. If we ignore the importance of a better-educated, better-informed citizenry, all the Internet access in the world won't really add up to much.

Notes

1. U.S. Department of Commerce, "The Emerging Digital Economy II," June 1999, <http://www.ecommerce.gov/ede/ede2.pdf> (accessed July 31, 2000).
2. See the 1998 Reading Excellence Act, as noted by the National Institute for Literacy (NIFL) at <http://www.nifl.gov/lincs/collections/policy/rea.html> (accessed July 31, 2000).
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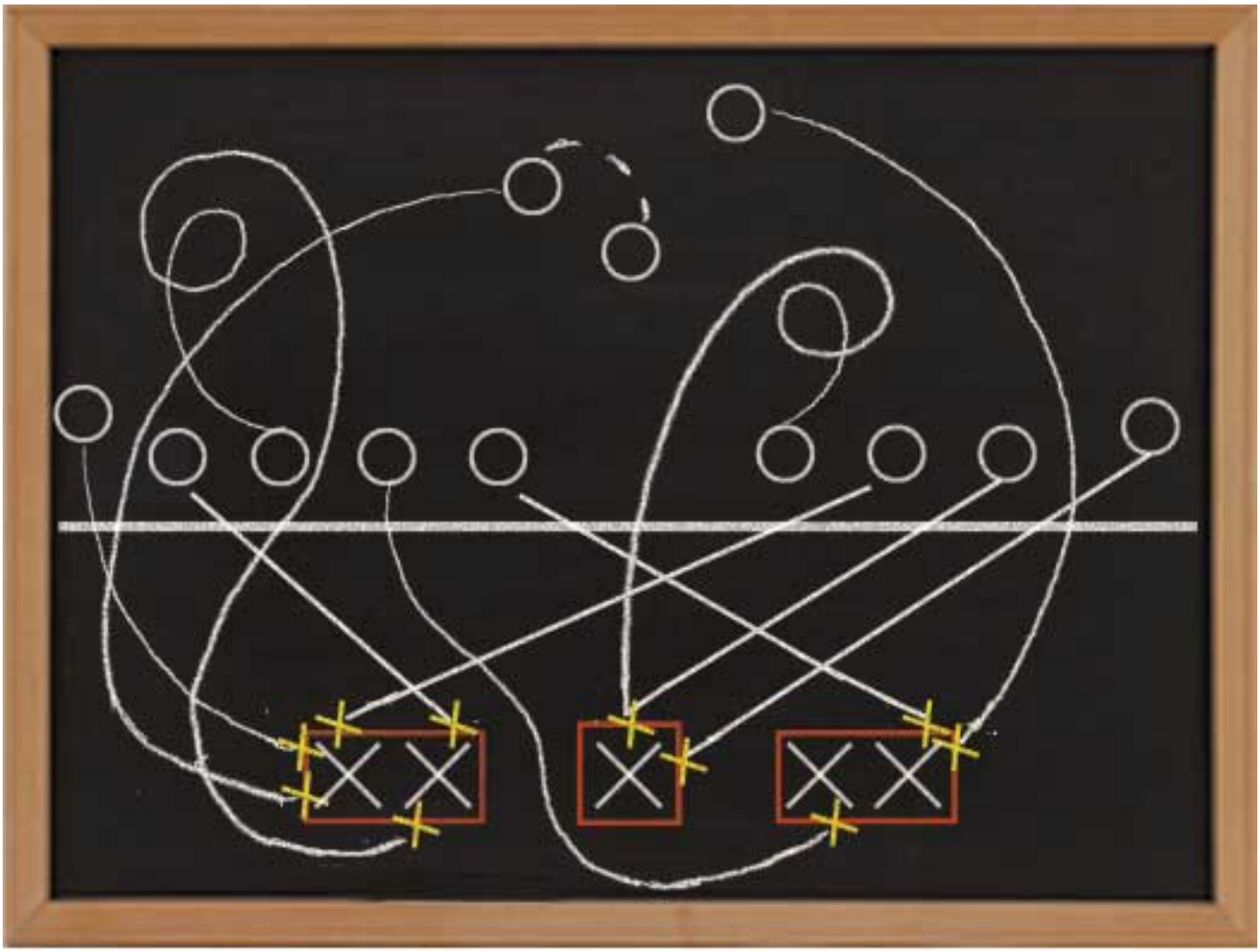

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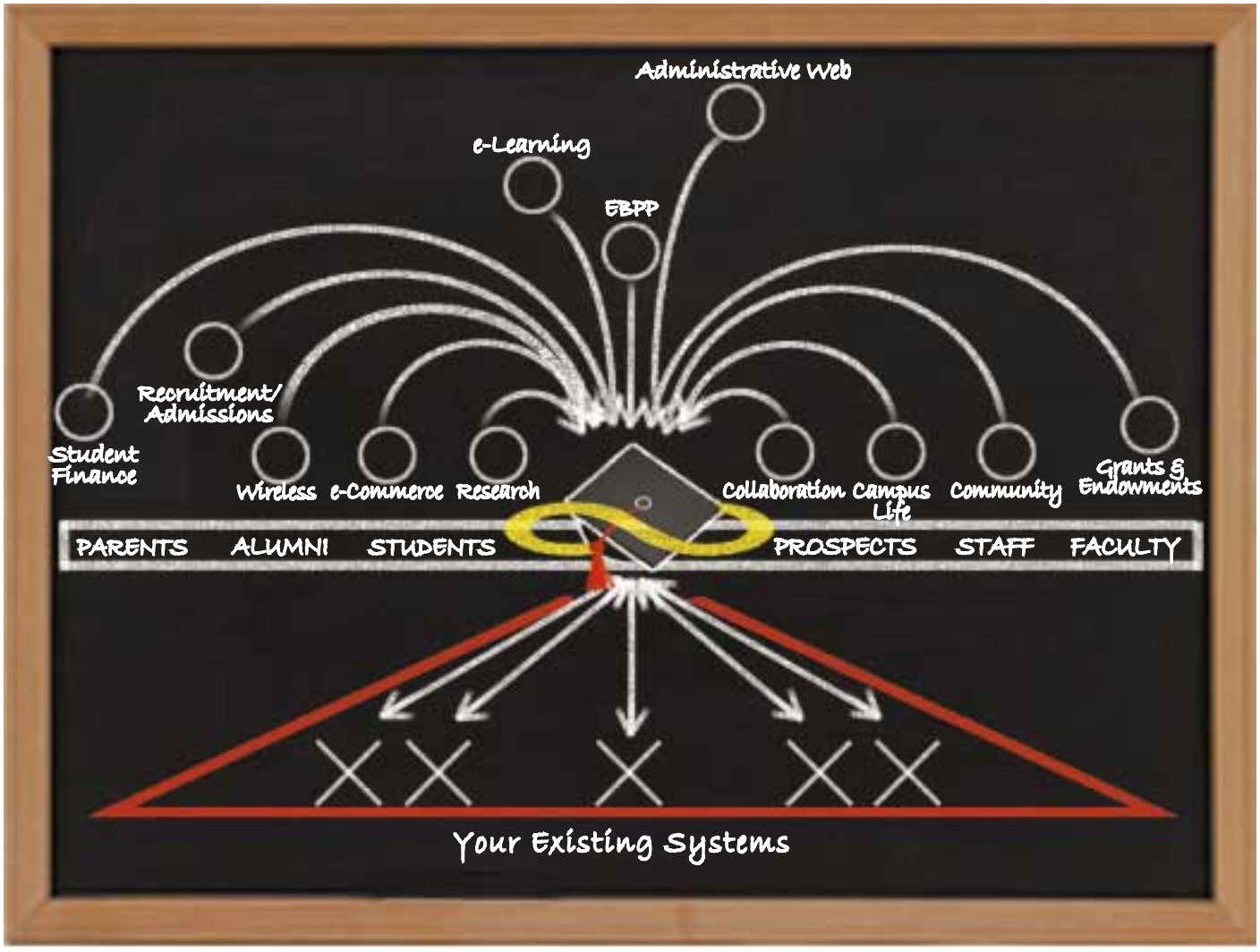

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