

# **A Differential Feature-Cost Analysis of Internet-Based Career Information Delivery Systems (CIDS): Technical Report Number 24**

James P. Sampson, Jr.  
Jill A. Lumsden  
Darrin L. Carr  
Elisa A. Rudd

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Center for the Study of Technology in Counseling and Career Development  
University Center, Suite A4100, The Florida State University  
Tallahassee, FL 32306-2490  
(850) 644-6431 (voice) (850) 644-3273 (FAX)  
<http://www.career.fsu.edu/techcenter>

James P. Sampson, Jr. is Professor in the Department of Human Services and Studies and co-director of the Center for the Study of Technology in Counseling and Career Development at The Florida State University. Jill A. Lumsden is Coordinator, Career Development Services and Darrin L. Carr is a Career Advisor at The Career Center, and both are doctoral students in the Department of Human Services and Studies at The Florida State University. Elisa A. Rudd is Assistant Director of Career Services at the University of North Carolina at Asheville.

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**A Differential Feature-Cost Analysis of Internet-Based Career Information Delivery Systems  
(CIDS): Technical Report Number 24**

**Abstract**

The primary purpose of this study was to highlight similarities and differences among Internet-based career information delivery systems (CIDS) so that practitioners, system developers, policy makers, and researchers may make informed decisions concerning such sites. The specific Internet-based CIDS included in this analysis were: 1) e-Choices, 2) Career Information System – National site, 3) Embark.com - Education and Career Opportunities System (ECOS), 4) Georgia Career Information System, 5) Illinois Career Information System (Horizons), 6) Indiana Career and Postsecondary Advancement Center (ICPAC), and 7) Washington Occupational Information System (WOIS). For the purposes of this analysis, features included: 1) site content, 2) user friendly features, 3) support resources, and 4) access policy, while costs included license fees. The data presented in this analysis were gathered from on-line CIDS use, support materials provided on-line, and telephone interviews with the developers.

## Background

For the purposes of this paper, an Internet-based career information delivery system (CIDS) is defined as including the following three components: 1) assessment, 2) search capability, 3) information delivery (educational and occupational data), and these components must be integrated to assist the individual in using the information from one element of the web site to complete another element of the site. Examples of integration include using assessment results to search for occupations, or looking up educational programs for an occupation being researched. This definition is congruent with the definition of CIDS adopted in the standards of the Association of Computer-Based Systems for Career Information, "A computer-based career information system delivers integrated assessment and search functions linked to career and educational information in an environment that provides user support."

An essential element in evaluating the appropriateness of potential sites for various users and populations involves an analysis of data on the effectiveness of CIDS with different populations. The process of completing research and evaluation studies is, however, a time-consuming process. Furthermore, CIDS are extremely dynamic, in that they are continuously being revised and updated as the nature of the Internet allows for immediate modifications. The rapidity of site change complicates the evaluation of Internet-based CIDS. These two problems, the time lag in publishing research and evaluation studies and the rapid evolution of CIDS on the Internet, necessitate a multidimensional approach to the evaluation process.

The use of a differential feature-cost analysis offers a potential solution to the above problems. A differential feature analysis allows the comparison of two or more CIDS in terms of the features available. In regards to previous feature-costs analyses of computer-assisted career guidance systems (CACGS) (e.g., Sampson, et al. , 1998), Gati (1990) stated, "a feature analysis of the systems may be used to eliminate a particular system because of the presence (or absence) of a critical undesirable (or necessary) feature" (p. 122). This also applies to the analysis of Internet-based CIDS. An assumption made here is that literature relevant to CACG systems is also relevant for this analysis of Internet-based CIDS. Examining the features of an Internet-based CIDS allows practitioners to understand the most optimal ways to integrate the site into their existing service delivery.

For the purposes of this analysis, features include 1) site content, 2) user-friendly features, 3) support resources, and 4) access policy, while costs include license fees. Because this type of analysis is limited to features and costs, which are known at the time the site is reviewed, the findings can be made available in a timely fashion. This report continues with the purposes of the study, methodology, results, discussion, and the conclusion.

## Purposes of the Study

The primary purposes of this study are to identify what Internet-based CIDS exist and to highlight similarities and differences among Internet-based CIDS, so that practitioners may make more informed decisions concerning the integration of sites into service delivery, Internet-based CIDS developers may more systematically present information about their site, policy makers may

monitor the developing scope and direction of site features and costs, and researchers may more fully describe Internet-based CIDS in their studies. The specific Internet-based CIDS included in this analysis are: 1) e-Choices, 2) Career Information System - National site, 3) Embark.com - Education and Career Opportunities System (ECOS), 4) Georgia Career Information System, 5) Illinois Career Information System (Horizons), 6) Indiana Career and Postsecondary Advancement Center (ICPAC), and 7) Washington Occupational Information System (WOIS). National Career Information System (CIS) delivers sites for the states of Alaska, Idaho, Massachusetts, Nebraska, Nevada, Ohio, and Oregon that contain state-specific information. While these sites were reviewed, they were not listed individually due to substantial similarities to the Career Information System (National site). Contact information for the organizations that publish these CIS-based sites is provided later in this document.

## **Methodology**

The following methodology will describe the selection criteria for including Internet-based CIDS in this analysis, how features were established, procedures for collecting and analyzing the data, and limitations of the study.

### Internet-Based CIDS Selection Criteria

The following criteria were used in selecting Internet-based CIDS for inclusion in this analysis: 1) the state provider is included in the Association of Computer-Based Systems for Career Information (ACSCI) directory and the state has an Internet version of their system, 2) the site includes components that address self-assessment, the generation of alternatives through search, and the delivery of occupational and educational information, as well as integration among these components. Many web sites offer valuable information but do not have the full features or integration typically associated with CIDS. Examples of Internet sites that do not meet this full criteria, yet may contain valuable information, are listed later in this report. This table illustrates which criteria used in this study are met and not met by each site.

### Establishment of Features

Features were established by beginning with the features utilized by Sampson, et al. (1998) in the cost-feature analysis of computer-assisted career guidance systems (CACGS). As the CIDS were reviewed, features were added or removed to best reflect the existing features of sites. Some features were included based on the emerging national standards for Internet delivery of CIDS, such as the NCDA Guidelines for the Use of the Internet for Provision of Career Information and Planning Services (National Career Development Association, 1997).

### Procedures

A four member research team was assembled to conduct this analysis. The research team met to review the purposes of the present research and then met as a group several times to discuss common criteria for features and to suggest the addition of new features or the deletion of previous features. Developers were contacted to ask if they were willing to participate in the study. All developers agreed to participate and supplied information (e.g., passwords) required to access their Internet-based CIDS.

Each developer's Web site was then reviewed using the checklist in Table 1 by two members of the research team. Disagreements between team members over the presence or absence of specific features were resolved through group discussion and a second review of the site for the feature in question.

When different terminology was used by developers to represent similar features, a "/" mark was used to combine terms, e.g., earnings/wages. In reviewing the sites, information was not considered to be part of the Web site if it originated from another site. Instead, this information was considered a link.

A draft of the report was then made available to the developers of each site to identify factual errors and discuss the criteria for receiving a "yes" or "no" for specific features in question or specific cost data. Factual errors were then corrected and developer comments were taken into consideration by the authors in completing the analysis and the discussion. The authors assume full responsibility for the quality of the analysis and related interpretations that are included in this study.

### Limitations

While every attempt has been made to be accurate, there are inherent limitations in any methodology. First, the following analysis does not examine the effectiveness or desirability of the features identified for the sites. Although a site may be granted a "yes" for a particular feature, this feature may not be particularly effective or desirable for the goals of one's clientele. It is important not to confuse effectiveness with quantity of features. Jepsen (1990) stated that, "... the mere presence of a feature as part of any complex system does not assure its effectiveness" (p. 130). Furthermore, features that are present may not be desirable. Gati (1990; 1994; 1996) cautions that features initially perceived as desirable may actually be detrimental to good practice.

A second limitation involves the use of a "checklist" approach in presenting the data. In an effort to present feature data in a succinct manner, a dichotomous yes - no "checklist" comparison of sites was used, i.e. "Feature X: Does Site A have it? Does Site B?" This approach effectively simplified a massive amount of data. However, potential problems occur when this methodology oversimplifies and obscures reality. Certain features cannot be adequately explained by this "yes" - "no" analysis. This type of analysis does not capture some of the true differences. For example, Internet-based CIDS may contain financial aid information for education institutions. However, there may be wide differences in the quantity and quality of information provided about financial aid. There are no quality standards required to achieve a "yes" for any particular feature. For example, there were no checks on the source validity and bias that may be inherent in outlook information.

Also related to the limitation of using a "checklist" approach, the awarding of a "no" for any given site feature is not necessarily "bad" and the awarding of a "yes" for any given site feature is not necessarily "good." In some cases a "no" may not indicate the lack of a relevant site feature. For example, if the site administers an assessment on-line that a professional views as inappropriate for her client, then a "yes" for this site feature is irrelevant. Oliver (1990) noted

that the checklist approach is a tool to be used in evaluating a system for a specific population. The checklist serves as an organizer for further investigation, not as a final evaluation of the site.

A third limitation of this study involves the dynamic nature of the Internet. A strength of Internet-based CIDS is the ability to constantly update and add features and content. This strength poses a challenge to any study attempting to review these features and content. Any attempt to do so is simply a snapshot in time.

## Results

The results of the analysis are provided in a series of Tables. [Table 1](#) provides data on seven Internet-based CIDS available on-line. It includes site content, user-friendly features, support resources, and access policy. [Table 2](#) provides data on costs to access each of the Internet-based CIDS. [Table 3](#) identifies other state career information sites which were judged as not meeting the CIDS criteria defined earlier. [Table 4](#) provides the contact information for Internet CIDS site developers. [Table 5](#) provides contact information for state sites delivered by Career Information System.

## Discussion

In light of the results obtained in this study, the following section will discuss trends in funding and costs, user support and identification of user needs, information provided by sites on identity and qualifications of the developers, data provided on validity of assessments and information, use of various media and audio by sites, integration features and strategies for access, and reference to ACSCI standards.

The growth and development of these sites appears to have been supported by four funding mechanisms: 1) separate fees charged to organizations (e.g., schools) that in turn provide access to their members (e.g., students), 2) access is bundled with fees paid for PC-based systems, 3) access is free and granted to members of a certain group (e.g., an entire state) due to underwriting by a government agency, and 4) access is universal due to underwriting by a government agency. There is currently no evidence of an Internet CIDS that derives direct support from an individual, fee per service basis.

While these Internet-based CIDS are not directly supported by individual users, it is the individual who ultimately benefits from these sites. However, not all of these individuals have the capability to initiate or sustain the career exploration and decision-making process (Sampson, Peterson, Reardon, & Lenz, in press). Varying degrees of professional support for CIDS use may be necessary depending upon user needs (Sampson, 1997). None of the sites include a description of circumstances where users may need help applying the information to their specific needs. It would benefit these users if sites included contact information for local referral sources based upon user needs.

Basing the design of Web sites for career information delivery on a needs-based model, helps individuals to more quickly find information that meets their needs while understanding

how to use the information they receive (Sampson, 1999). Traditionally, the user has been required to learn the navigation metaphors and "rules" of a particular Web site in order to find the information which they seek. In a needs-based design, CIDS features are categorized by commonly occurring user needs. For example, college graduates often need to conduct a job search and high school students often desire to explore their occupational interests. This approach requires user reflection and provides a framework with which users can match their needs to features available on the site.

A great deal of the information about site developers and site content is contained in separate Web sites about the developer or sponsoring organization. This information is not well integrated into the Internet CIDS themselves. Users may begin their search for career information at the Web site address for the Internet CIDS, thus missing the opportunity to find this valuable information. For example, while developers often identify themselves on their CIDS site, this identification may not be linked to the qualifications of the developer, which is posted on a different Web site. Therefore, consumers have less information with which to make informed choices about the quality of available sites. Although a qualified developer does not ensure the existence of a valid CIDS, it is one useful piece of information individuals may use in selecting quality sites.

Similarly, none of the sites provide information on validity of assessments. This information is necessary to allow practitioners to ethically discharge their responsibilities and users to determine if the assessment will meet their needs. Likewise, while original sources were cited in much of the information content, none of the sites provided a general statement about information gathering and authoring procedures or quality control methods. Practitioners and users must have confidence that the information delivered is accurate and relevant to their needs.

Users may potentially benefit from exposure to "original source content" via links to other sites. While there is a natural desire to keep users on one's own Web site, experience with real world content may be a valuable aspect of the exploration process. For example, links to union or employer web pages offering apprenticeships would provide the learner with 1) evidence to validate information in the CIDS, 2) a chance to build a schema by comparing and contrasting options; and 3) information on which to take further action (e.g., information interview, job shadow, or application). The downside to providing users direct access to such content is that they can easily become lost and they may not be able to judge the variable quality of information presented.

The Internet offers a wide variety of media creation and integration tools to developers, however sites currently rely on text-based strategies for information presentation. This is most likely due to delivery issues that are associated with multimedia and the Internet (e.g., bandwidth, platform standards, and production costs). However, the user experience could be enhanced by presenting complex information (e.g., wage and Labor Market Information) in the form of simple charts delivered as graphics.

One form of information delivery offering rich possibility to developers is audio. None of the sites appear to use this presentation method, even though audio is a relatively bandwidth

friendly form of multimedia. It can also be a relatively easy to produce and cost effective method of integrating "real world" content (e.g., vocational biographies). Audio offers additional benefits to those with visual disabilities or limited reading skills. It is also important for developers to consider other accessibility issues when designing and delivering their products. For example, all developers may wish to provide alternative means of navigation or text only versions of their Web sites for individuals with visual disabilities, who may depend on text-to-speech tools for navigating the World Wide Web.

Overall, Internet-based CIDS appear to be in an early stage of development in comparison with their older, PC-based siblings. While the core information contents of Internet-based and PC-based CIDS are almost identical, tools that users can use to integrate this information in the decision-making process appear less developed. For example, none of the sites offer the capability to compare two education providers or two occupations, a common feature of standalone CIDS. This situation will probably improve over time, as developers are more able to apply their past experience with CACG systems to an Internet environment that is more responsive and fully featured.

Similarly, only two CIDS currently offer an online portfolio and keep a user record through an individualized access strategy (i.e., users receive their own username and password). While group access strategies are easier to deliver and manage, they may possibly provide a less powerful experience for the user. By users having their own unique records, tools for portfolio development (e.g., resumes, assessment records, and education) and information management (e.g., individual learning plans and histories of past site utilization) become possible. One possible disadvantage the individual access strategy presents is a potential learning barrier or concern about confidentiality that users may choose to avoid. Such barriers and concerns may decrease site utilization.

Currently, there is no reference to ACSCI standards on any of the Internet-based CIDS. These standards represent a powerful tool for educating users and practitioners about what they should expect from providers in terms of quality and use of career information. Rather than failing to meet standards, it may be that in the rush to make sites available, time was not allocated for showing adherence to standards.

### **Conclusion**

While tremendous progress has been made over the past two years in the development and delivery of Internet-based CIDS, this career resource is still young. Similar to the original transition from mainframe minicomputer-based career information delivery systems to PC platforms, CIDS have begun the transition from PCs to those that leverage the full potential of the Internet. Based upon a feature-cost analysis of seven existing Internet-based CIDS, it appears that practitioners, site developers, policy makers, and researchers may wish to focus their thinking about the future of Internet-based CIDS around five key activities. These include: 1) providing information to users about developer qualifications, information validity, and assessment validity, 2) including needs-based information access strategies for users, 3) integrating multiple media formats and original source material into each site, 4) developing

tools which assist users in integrating site information into their individual career decision-making processes, and 5) educating users about standards of practice in career information delivery. The rapid pace of Internet technology development will most likely bring an accelerated rate of change to career information delivery systems and their features and costs. Furthermore, it is possible that we will see the development of CIDS that base their cost recovery on a fee per service basis. Both of these eventualities will require ongoing analysis and discussion among practitioners, site developers, policy makers, and researchers to ensure that users find and use the information they need to make effective career decisions.

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## Feature Comparison of Internet-Based Career Information Delivery Systems

Table 1

	EC <sup>1</sup>	CIS	ES	GA	IL	IN	WA
<b>SITE CONTENT</b>							
<b>Web Site Introduction</b>							
Identification of developers	Y	Y	Y	Y	Y	Y	Y
Information on the qualifications of developer	N	Y	N	Y	Y	Y	Y
Information on validity of assessments	N	N	N	N	N	N	N
Information on validity of the information	N	N	N	N	N	N	N
Description of circumstances where user may need professional assistance	N	N	N	N	N	N	N
Description of limits of confidentiality of user data input on the Web site	Y	N	Y	N	N	N	N
Recommendation on use of site based on identified user needs	N	N	Y	N	N <sup>2</sup>	Y	N
Notice of how to obtain local assistance with career problem solving	N	N	N	N	N	Y	N
Notice of voluntary adherence to ACSCI standards	N	N	N	N	N	N	N
Indication of how ACSCI standards are met	N	N	N	N	N	N	N
<b>Assessment</b>							
Standardized tests administered on-line	Y	N	N	N	N	N	N
Allows input of other assessment results	Y	N	Y	Y	N	Y	Y
Sort based on self-assessment of variables	Y	Y	Y	N	Y	Y	Y
<b>Search Occupational Information</b>							
by assessment results (on-line or off-line)	Y	N	Y	Y	N	Y	Y
by sort based on self-assessment of variables	Y	Y	Y	N	Y	Y	Y
by title (e.g., SOC or alpha listing)	Y	Y	Y	Y	Y	Y	Y
by key word or string	Y	N	Y	N	N <sup>2</sup>	Y	Y
<b>Search Educational Information</b>							
by title (e.g., CIP, or alpha listing)	Y	Y	Y	Y	Y	Y	Y
by key word or string	Y	N	Y	N	N <sup>2</sup>	Y	Y
by level of program	Y	Y	Y	N	Y	N	Y
<b>Occupational Information</b>							
Nature of the work/work activities	Y	Y	Y	Y	Y	Y	Y
Working conditions/settings	Y	Y	Y	Y	Y	Y	Y
Employment statistics	Y	Y	Y	Y	Y	Y	Y
Education/training, other qualifications	Y	Y	Y	Y	Y	Y	Y
Advancement	Y	N	N	Y	Y	N	Y
Job outlook	Y	Y	Y	Y	Y	Y	Y
Earnings/wages	Y	Y	Y	Y	Y	Y	Y
Licensing/certification	Y	Y	Y	Y	Y	Y	Y
Related occupations	Y	Y	Y	Y	Y	Y	Y

	EC <sup>1</sup>	CIS	ES	GA	IL	IN	WA
Sources of additional information	Y	Y	Y	Y	Y	Y	Y
DOT code	Y	Y	N	Y	Y	N	Y
O*NET/SOC code	Y	N	N	Y	N	N	N
State-specific data	Y	N	Y	Y	Y	Y	Y
Military information	Y	Y	N	Y	Y	N	Y
<b>Educational Information</b>							
Contact information	Y	Y	Y	Y	Y	Y	Y
Type of school/setting	Y	Y	Y	Y	Y	Y	Y
Admissions information	Y	Y	Y	Y	Y	Y	Y
Costs	Y	Y	Y	Y	Y	Y	Y
Financial aid	Y	Y	Y	Y	Y	Y	Y
Programs of study	Y	Y	Y	Y	Y	Y	Y
Housing	Y	Y	Y	Y	Y	Y	Y
Services	Y	Y	Y	Y	Y	Y	Y
Activities/athletics	Y	Y	Y	Y	Y	N	Y
Accreditation	Y	Y	Y	Y	Y	N	Y
Student body	Y	Y	Y	Y	Y	Y	N
State-specific data	N	N	N	Y	Y	Y	Y
Apprenticeship information	Y	N	N	Y	Y	Y	Y
<b>Instruction</b>							
Employment planning (job hunt, resume, interview, etc.)	Y	Y	Y	Y	Y	Y	N
Career decision making	N	Y	Y	N	N	Y	N
Portfolio development	N	Y	N	Y	N	Y	N
<b>Creation and Maintenance of Information in Portfolio</b>	Y	N	Y	N	N	N	N
<b>Links to Other Web Sites</b>							
Occupational	Y	Y	Y	Y	Y	Y	Y
Education/training	Y	Y	Y	Y	Y	Y	Y
Financial aid	N	Y	Y	Y	Y	Y	Y
Licensure/certification	N	Y	N	N	Y	N	Y
Apprenticeships	N	N	N	N	N	N	N
Job listings	N	Y	N	Y	Y	Y	Y
Military	N	N	N	N	N	Y	N <sup>2</sup>
Assessment	N	N	Y	N	Y	Y	Y
<b>USER-FRIENDLY FEATURES</b>							
<b>On-Line Tutorial</b>	Y	N	Y	N	N	N	N
<b>Purpose of Each Component/Module Explained</b>	Y	Y	Y	N	Y	N	Y

	EC <sup>1</sup>	CIS	ES	GA	IL	IN	WA
<b>Information Presentation</b>							
Tables	Y	N	Y	Y	Y	Y	N
Text	Y	Y	Y	Y	Y	Y	Y
Graphic presentation of numerical data	N	N	N	N	N	N	N
Photographs	Y	N	N	N	Y	Y	N
Video clips	N	Y	N	N	N	Y	Y
Audio clips	N	N	N	N	N	N	N
<b>Search</b>							
Within a category/section	Y	Y	Y	Y	Y	Y	Y
The entire site	N	Y	Y	N	Y	Y	Y
<b>Web Site Navigation</b>							
Site map	Y	Y	Y	Y	Y	Y	Y
Return to home	Y	Y	Y	Y	Y	Y	Y
<b>On-Line Help</b>							
Text help	Y	Y	Y	N	Y	N	N
Video help	N	N	N	N	N	N	N
Audio help	N	N	N	N	N	N	N
<b>Record Keeping</b>							
Capability to store user data between sessions	Y	N	Y	N	N	N	N
Capability to indicate completed features	Y	N	N	N	N	N	N
<b>SUPPORT RESOURCES FOR PRACTITIONERS</b>							
<b>Technical Support</b>							
1-800 number	Y	Y	Y	N	Y	Y	Y
Email contact	Y	Y	Y	Y	Y	Y	Y
<b>Materials for Curriculum Integration (on-line)</b>							
	N	Y	Y	N	Y	N	Y
<b>ACCESS POLICY</b>							
Fee to access	Y	Y	Y	Y	N	N	Y <sup>3</sup>
Password protected	Y	Y	Y	Y	Y	N	Y
Open	N	N	N	N	N	Y	N

1. EC (e-Choices), CIS (Career Information System - National Site), ES (Embark.com - Education and Career Opportunities System (ECOS)), GA (Georgia Career Information System), IL (Illinois Horizons), IN (Indiana Career and Postsecondary Advancement Center), WA (Washington Occupational Information System)
2. Similar feature can be found on organizational Web site.
3. Included in license fee for stand alone software product.

**Cost Comparison of Internet-Based Career Information Delivery Systems****Table 2**

<b>Internet CIDS</b>	<b>Costs for Access</b>
e-Choices	Site must have license/contract for Choices personal computer version. Cost for access to Internet product is an additional \$100. This provides 100 user id's and passwords. Additional 100 user id's and passwords are \$40. User id's and passwords may be used by more than one user, but not at the same time.
Career Information System - National Site	Organizations pay for access based on number of users on a categorical fee structure.
Embark.com - Education and Career Opportunities System (ECOS)	Subscription fees are charge per site based on student enrollment. Discounts available for multi-site purchases.
Georgia CIS	Single license fee provides access to PC, Macintosh, and Internet versions.
Illinois CIS (Horizons)	Access is free to all schools (high schools, community colleges, and universities), as well as to all one-stop centers in the state of Illinois. This is provided by a grant from Education to Careers through the State Board of Education. The current grant is in effect until June 30, 2000.
Indiana Career and Postsecondary Advancement Center	Access is free for all users.
Washington Occupational Information System	Access is free for those agencies and schools that purchase the stand alone software product.

**Additional Career Information Sites Judged As Partially Meeting Internet-Based CIDS Criteria<sup>1</sup>****Table 3**

State	Assessment	Search	Information		Integration
			<i>Occupational</i>	<i>Educational</i>	
Alabama <sup>2</sup>	N	N	Y	N	N
Michigan <sup>3</sup>	Y	Y	Y	N	N
Missouri <sup>4</sup>	N	N	Y	N	N
North Carolina <sup>5</sup>	N	N	Y	N	N
North Dakota <sup>6</sup>	N	Y	Y	Y	Y
New Jersey <sup>7</sup>	N	Y	Y	N	N
Rhode Island <sup>8</sup>	N	N	Y	Y	N
Virginia <sup>9</sup>	N	Y	Y	N	N

1. To be considered an Internet-based career information delivery system, the site must have an assessment component, an occupational information component, and an educational information component which are integrated and searchable. These three components must be contained within the site. Linking to components on other sites is not sufficient to meet the requirements of the definition.
2. <http://soiccal.huntingdon.edu/SOICC/default.html>
3. <http://www.mois.org/>
4. <http://www.works.state.mo.us/moicc>
5. <http://www.soicc.state.nc.us/soicc/index.htm>
6. <http://www.state.nd.us/jsnd/ois.htm>
7. <http://www.wnjp.in.state.nj.us/>
8. <http://www.dlt.state.ri.us/webdev/lmi/rioicc/rioicchm.html>
9. <http://vaview.vavu.vt.edu/>

### Contact Information of Internet-Based CIDS Developers

**Table 4**

Internet CIDS	Address and Phone Numbers
e-Choices <a href="http://www.echoices.com">http://www.echoices.com</a>	Careerware: ISM Systems Corp. 2220 Walkley Road Ottawa, Ontario K1G 5L2 CANADA <b>(800) 267-1544</b> / (613) 739-4933 FAX <a href="mailto:bmaccall@ca.ibm.com">bmaccall@ca.ibm.com</a> <a href="http://www.careerware.com">http://www.careerware.com</a>
Career Information System - National Site <a href="http://cis.uoregon.edu/natcis">http://cis.uoregon.edu/natcis</a>	Dan Erdmann, Director intoCareers 975 High Street Eugene, OR 97401 <b>(541) 346-2356</b> / (541) 346-2346 FAX <a href="mailto:erdmann@oregon.uoregon.edu">erdmann@oregon.uoregon.edu</a> <a href="http://intoCareers.uoregon.edu">http://intoCareers.uoregon.edu</a>
Embark.com - Education and Career Opportunities System (ECOS) <a href="http://ecos.embark.com">http://ecos.embark.com</a>	Sharon K. Thompson Embark.com 111 Townsend St. San Francisco, CA 94107 <b>(800) 419-5023 ext. 1740</b> / (415) 778-6263 FAX <a href="mailto:sthompson@embark.com">sthompson@embark.com</a> <a href="http://www.embark.com">http://www.embark.com</a>
Georgia CIS <a href="http://www.gcic.peachnet.edu">http://www.gcic.peachnet.edu</a>	Les Janis, Director Georgia Career Information Center Georgia State University University Plaza Atlanta, GA 30303 <b>(404) 651-0153</b> / (404) 651-3112 FAX <a href="mailto:lesjanis@gcis.gsu.edu">lesjanis@gcis.gsu.edu</a> <a href="http://www.gcic.peachnet.edu">http://www.gcic.peachnet.edu</a>
Illinois CIS (Horizons) <a href="http://www.ioicc.state.il.us/Horizons/default.htm">http://www.ioicc.state.il.us/Horizons/default.htm</a>	Bob Gray, Executive Director Illinois Occupational Information Coordinating Comm. 217 East Monroe St. Suite 203 Springfield, IL 62760 <b>(217) 785-0789</b> / (217) 785-6184 FAX <a href="mailto:bgray@ioicc.state.il.us">bgray@ioicc.state.il.us</a> <a href="http://www.ioicc.state.il.us">http://www.ioicc.state.il.us</a>
ICPAC <a href="http://icpac.indiana.edu">http://icpac.indiana.edu</a>	Sloane V. Boyd, Director of Web Services Indiana Career & Postsecondary Advancement Center 2805 E 10 <sup>th</sup> Street Bloomington, IN 47408 <b>(800) 992-2076</b> / (812) 855-4220

	<p><a href="mailto:svboyd@indiana.edu">svboyd@indiana.edu</a>  <a href="http://icpac.indiana.edu">http://icpac.indiana.edu</a></p>
<p>WOIS  <a href="http://www.wois.org/online/">http://www.wois.org/online/</a></p>	<p>Karen Naughton          Washington Occupational Information System          1415 Harrison Ave NW, Suite 201          Olympia, WA 98502  <b>(360) 754-8222</b> / (360) 943-4257 FAX  <a href="mailto:karen@wois.org">karen@wois.org</a>  <a href="http://www.wois.org/">http://www.wois.org/</a></p>

## Contact Information for Internet-Based State CIDS Delivered by Career Information System

Table 5

Internet CIDS	Address and Phone Numbers
Alaska CIS <a href="http://cis.uoregon.edu/akcis/">http://cis.uoregon.edu/akcis/</a>	Alaska Career Information System University of Oregon 1177 Pearl Street Eugene, OR 97401-3527 <b>(541) 346-3875</b> / (541) 346-2346 FAX <a href="mailto:ncishelp@oregon.uoregon.edu">ncishelp@oregon.uoregon.edu</a> <a href="http://cis.uoregon.edu/aksupport/">http://cis.uoregon.edu/aksupport/</a>
Idaho CIS <a href="http://cis.uoregon.edu/idcis">http://cis.uoregon.edu/idcis</a>	Chuck Mollerup, Director Idaho Career Information System Box 83720 Boise, ID 83720-0095 <b>(208) 334-3705</b> / (208) 334-2365 FAX <a href="mailto:cmolloru@cis.state.id.us">cmolloru@cis.state.id.us</a> <a href="http://www.sde.state.id.us/cis">http://www.sde.state.id.us/cis</a>
Massachusetts CIS <a href="http://cis.uoregon.edu/macis">http://cis.uoregon.edu/macis</a>	Bob Vinson, Executive Director Massachusetts Career Information System DET, 19 Staniford Street, 2nd Floor Boston, MA 02152 <b>(617) 626-5718</b> / (617) 727-2039 FAX <a href="mailto:masscis@detma.org">masscis@detma.org</a> <a href="http://www.detma.org/masscis">http://www.detma.org/masscis</a>
Nebraska CIS <a href="http://cis.uoregon.edu/necis">http://cis.uoregon.edu/necis</a>	LeeAnn Roth, Director Nebraska Career Information System Box 880552 421 Nebraska Hall, UNL Lincoln, NE 68588-0552 <b>(402) 472-2570</b> / (402) 472-5907 FAX <a href="mailto:ncis@unlinfo.unl.edu">ncis@unlinfo.unl.edu</a> <a href="http://www.unl.edu/dvae/ncis">http://www.unl.edu/dvae/ncis</a>
Nevada CIS <a href="http://cis.uoregon.edu/nvcis/">http://cis.uoregon.edu/nvcis/</a>	Nevada Career Information System 500 East Third Street Carson City, NV 89713-0021 <b>(775) 687-4577</b> / (775) 687-4119 FAX <a href="mailto:pbrisbin@govmail.state.nv.us">pbrisbin@govmail.state.nv.us</a> <a href="http://www.state.nv.us/detr/ncis">http://www.state.nv.us/detr/ncis</a>
Ohio CIS <a href="http://cis.uoregon.edu/ohcis">http://cis.uoregon.edu/ohcis</a>	James Utendorf, Supervisor Ohio Career Information System 65 South Front St., Rm. 912 Colombus, OH 43215-4183 <b>(614) 644-6771</b> / (614) 644-6775 FAX

	<p><a href="mailto:sd_utendorf@ode.ohio.gov">sd_utendorf@ode.ohio.gov</a>  <a href="http://www.ode.ohio.gov/www/sd/ocis1.html">http://www.ode.ohio.gov/www/sd/ocis1.html</a></p>
<p>Oregon CIS  <a href="http://cis.uoregon.edu/orcis/webcis">http://cis.uoregon.edu/orcis/webcis</a></p>	<p>Cheryl Buhl, Director  Oregon Career Information System  1244 University of Oregon  Eugene, OR 97403-1244  <b>(541) 346-3872</b> / (541) 346-2346 FAX  <a href="mailto:cherylb@orcis.uoregon.edu">cherylb@orcis.uoregon.edu</a>  <a href="http://cis.uoregon.edu/orcis">http://cis.uoregon.edu/orcis</a></p>