



**Academic Data Research Services Alliance:  
Bridging the Gap between Data and Discovery**

**EDUCAUSE 2002**

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**Abstract:** Numeric and spatial data are made available to users by various units in universities today. Improving access and utilization of data requires creation of shared standards and policies and the building of formal relationships between these units. The University of Kansas Academic Data Research Services Alliance provides a cross-unit model for improving data services.

<http://www.ku.edu/adrsa/>

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## ***Introduction***

Numeric and spatial data are available today in many different file types, media, and structures, and from a wide variety of providers. However, the very digital technologies that have revolutionized data distribution have inadvertently created problems. A previously fairly stable system of print materials has today transformed into a diffuse, constantly changing array of electronic resources, each using different formats and access methods. The current situation leaves many users frustrated or bewildered simply trying to determine where to begin. In addition, the variety of software tools, each being constantly added to, modified, and upgraded, simply compounds the problem. In short, the process of locating, accessing, and analyzing data has become increasingly problematic. In recognition of this situation, in the mid-1990s key teaching faculty at the University of Kansas attempted to establish comprehensive numeric data resources access and services in support of scholarly research and teaching at the university. Ultimately, due to a variety of factors, this initial effort failed.

During the spring of 2000, KU Libraries was considering a new strategic planning effort. The Libraries had not previously articulated a program for developing and delivering data services. However, recognizing the strategic importance of technology-based services such as GIS, numeric data, streaming media, etc. as well as the problematic nature of data resources among the Libraries' collections and the Libraries' role as an ICPSR data source, the Libraries began to actively pursue the strategic development of a program of numeric data services. In parallel efforts, the university's Academic Computing Services (ACS) unit had succeeded in providing access to analytical tools and limited technical support for end users in a distributed network of labs across campus. However, a service program offering a comprehensive body of technology, content, and expertise in data services had not yet emerged at the university.

Casual dialog between the Head of the Anschutz Library and the Assistant Vice Chancellor for Information Services/Director of Academic Computing (ACS) led to a recognition of the mutually held goal of providing comprehensive and sustainable user services for numeric data and analytical technologies. Further discussion also confirmed an undeniable truth: neither the Libraries nor ACS could independently provide all aspects of a complete service program. Thus began a serious dialog about collaboration as a means of fulfilling our mutual mission as information service providers for the campus.

At the center of our investigation into the feasibility of a collaborative effort were several critical questions:

1. What mutual goals and/or concerns did we have as information service providers for the university?
2. Are similar programs present in the University environment? If so, what is the nature of these programs?

3. Which other university departments or programs should be involved or consulted?
4. How and by who would the program be authorized?

### ***Initial Steps***

As an initial step, we solicited a short list of likely customers and stakeholders of a collaborative data service and began a series of meetings to test relevancy, determine interest, and to solicit general feedback. During a three-month period in Fall 2000, we interviewed key faculty in business, economics, and related fields. We also conferred with other providers of 'social sciences' data and interested stakeholders in the area of social sciences research. Among these was the university's Policy Research Institute (PRI). A number of important themes surfaced in these discussions:

1. Teaching faculty in the social sciences and business were the initial core prospective user group for the collaborative service.
2. Frustration had developed regarding the lack of an accessible body of content and analytical tools for researchers across campus.
3. Research agencies at the University, such as the Policy Research Institute, had expertise in complex statistical analysis and with tools, owned some content resources, but had little visibility on campus. They were also ill-prepared to provide 'services' to a broad and relatively novice user constituency.
4. There was clear agreement about the institutional need for a collaborative, accessible support service for users of numeric data and its analysis.

### ***Moving Ahead***

In response to these concerns, a proposal for the Academic Data Research Services Alliance (ADRSA) was developed and presented to the Dean of Libraries and the Vice Chancellor for Information Services. Their support for the initiative was strong and we were charged to move ahead with laying the organizational groundwork for a new service program. This authorization meant that we now had to seriously consider in greater depth what our services would be, how they would be designed, and how they would be distributed and supported.

At this point, the Policy Research Institute inquired as to the possibility of their direct participation in ADRSA as a service provider. With this addition, we would now be able to provide a high level of support for statistical analysis. In addition, PRI was a U.S. Census depository, a Kansas State Data Center affiliate, and a publisher of the state's annual statistical profiles – in short, an excellent complement to and extension of library resources and ACS technical support.

To define the nature of the new service, we considered the following core issues:

1. What assets does each partner bring to the effort?
2. What are each partner's limitations?
3. What are the potential benefits of participation?
4. Who is the Audience? What is the level of interest at KU in utilizing the service?
5. How would the division of responsibility and effort be decided?

### ***Framing the New Service***

The work of determining our assets (i.e. resources and capabilities) and considering how they could be combined to deliver numeric data services prompted us to also articulate a rationale for designing the program. It was soon apparent that the best course was to have each of the ADRSA partners (the Libraries, ACS, and PRI) contribute what it *does best*. This leveraging of assets would promote consistency, quality, and sustainability in the services to come. Based on this assumption, each partners' contributions were designated as follows.

The Libraries' contribution includes:

1. Expertise in acquiring, describing, organizing, and making available information in all formats;
2. Collections of numeric data resources (content) from a variety of subject areas and sources;
3. An organizational infrastructure that supports professional end-user services, desktop technology, and systematic acquisition of additional content;
4. Access to resources and assistance regardless of departmental affiliation or status, and
5. Established liaison relationships across academic departments, as well as active outreach programs.

ACS contributes:

1. Expertise in configuring and delivering information technology across the University;
2. A well-developed technology infrastructure and IT management / planning practices;

3. Basic support for numeric data analysis in its labs;
4. Ready access to software and desktop technology, and server-based file storage; and
5. Established University-wide service goals.

PRI adds:

1. High-level expertise in data analysis and data structure;
2. Collections of relevant socio-economic data; and
3. Experience in compiling data and databases to support scholarly research and publishing.

By the end of 2001, ADRSA was near the end of it's "definition" phase and the partners felt ready to begin promotion of their service program across the University. Formal launch of the service was anticipated for Spring 2002.

### ***KU Digital Library Initiatives***

During this same timeframe, another major service development effort was underway at KU. Launched in late 2000 as a unit of Information Services, the Digital Library Initiatives (DLI) was created to bring together the content and expertise of the University Libraries and the Information Technology Services division (of which ACS is a part) to develop the digital library at KU.

While content and technology play a critical role in creating and sustaining the digital library, the DLI recognizes that these are only two pieces of the full picture. The complete digital library environment being developed at KU is probably best described by this excerpt from the 1997 *Report of the Santa Fe Planning Workshop on Distributed Knowledge Work Environments: Digital Libraries*:

*"[...] a 'digital library' is not merely equivalent to a digitized collection with information management tools. It is rather an environment to bring together collections, services and people in support of the full life cycle of creation, dissemination, use, and preservation of data, information and knowledge".*

*– Report of the Santa Fe Planning Workshop on Distributed Knowledge Work Environments: Digital Libraries, (1997), <http://www.si.umich.edu/SantaFe/>,*

We have built on this underlying concept by further programmatically defining the DLI as:

- Providing a focus for digital library efforts at KU by helping to set directions and goals

- Building from a solid base of knowledge in a variety of areas including
  - Technical concepts
  - Library / information science concepts and
  - Scholarly communications issues
- Taking a pragmatic approach by balancing theory with reality and managing expectations, and
- Placing an emphasis on collaborative efforts and community-building.

These underlying concepts have been key in helping focus the DLI's areas of emphasis and initial projects into several broad categories including:

- *Enhanced presentation / navigation / resource discovery*: providing effective, efficient access to existing networked scholarly / research materials through frameworks and systems that federate distributed information resources
- *Standards-based development*: supporting projects that build new, standards-based digital content;
- *Enhanced local resource management and dissemination*: providing effective, long-term management, and increased accessibility and visibility, for KU research information; and
- *University participation and community building*: involving members of the University community in DLI planning and development activities through various advisory groups and internal grant programs.

Thus, it seemed a natural fit when the DLI was approached in early 2002 to assume coordination of the fledgling ADRSA effort. The basic premise of the ADRSA – bringing together the various components of the data community on campus for more effective data access and use – matched perfectly with a basic collaborative principle of digital libraries adopted by the DLI:

*"Work on digital libraries aims to help with generating, sharing and using knowledge. It aims to improve practices of communities so they are more effective, efficient, productive and maximize the benefits of collaboration. It seeks to extend the content and utility of digital libraries to aid existing communities and to facilitate the emergence of new communities of discourse, research, and learning."*

– Report of the Santa Fe Planning Workshop on Distributed Knowledge Work Environments: Digital Libraries, (1997), <http://www.si.umich.edu/SantaFe/>,

In undertaking this coordination role, it quickly became apparent that the ADRSA faced many of the same issues as the DLI. These issues included organizational ones such as:

- defining leadership roles
- expertise identification and provision in areas such as:
  - collections / content
  - access strategies
  - technology
  - standards, etc.
- communication strategies and processes

- resources (i.e. funding), and
- leveraging expertise and resources through collaboration,

as well as a variety of operational issues including:

- diversity of content
- integration (formats, media, services)
- rights management / copyright / licensing
- granularity of both services and content
- evolving standards
- robust infrastructure needs including
  - interoperability and
  - scalability
- preservation / migration
- organizational structure, and
- collaborations on a variety of fronts including campus, state, national, and international.

### ***ADRSA in Action***

With coordination of the cross-divisional ADRSA partnership formalized under the KU Digital Library Initiatives in January 2002, efforts turned initially on reconfirming the roles and responsibilities of each partner and the service profile of the partnership. By focusing on the broader service needs identified through Digital Library efforts and each partners' areas of contribution, the major service components and roles of the ADRSA partnership were expanded to include spatial data and GIS services and ultimately defined as follows:

***Data Access:*** the Libraries will take primary responsibility for identifying and cataloging data resources available through the ADRSA partners and other agencies on campus. Resources include state, federal, international and commercial numerical and spatial data collected at the University of Kansas. In addition, the Libraries will act as the primary campus contact point for clients to identify appropriate resources, receive basic analysis support, and referral for more in-depth analysis services through ACS. In conjunction with the Digital Library Initiatives, ADRSA partners will assist in the development of a repository service for capturing and managing locally created datasets and other resources.

***IT Infrastructure:*** ADRSA partners will develop recommendations for and acquire the workstation, server, and storage resources required for client use to support data analysis from shared locations. In consultation with ADRSA partner staff, primarily ACS, this equipment may be used by clients to temporarily store data sets for transfer or analysis, perform basic data manipulation and analysis tasks. Temporary storage space will, in general, be made available through ACS. Clients may also transfer data extracts for manipulation / analysis on their own workstations or servers, within the limits of negotiated data licenses.

*Data Analysis:* ADRSA partners will provide assistance, as appropriate, in data manipulation and analysis. In general, once the appropriate numeric or spatial data resources are identified for clients, the Libraries will provide basic analysis and manipulation support, and referral for more in-depth analysis services through ACS or PRI. In addition to consultation services, analysis tools will be made available for use by clients on ADRSA partner equipment. ACS will act as the primary acquisition point for specialized manipulation and access tools in addition to providing access to some general tools.

*Data Education:* Through coordinated outreach and marketing, ADRSA partners will design and implement data literacy components to support the research methodology curriculum. Further collaboration supports the creation of new courses for data instruction.

*Service Assessment:* In order to maintain an efficient and effective service offering, services will be evaluated on a regular basis.

*Advisory Support:* ADRSA will establish a Faculty Advisory Group to help determine teaching and research trends and needs regarding data resources and related services.

Once these service components and partnership responsibilities were confirmed, the group turned its focus to branding and marketing ADRSA and its services in the following areas:

- Data discovery
- Data across the curriculum – methodology courses & resources
- Data talk – a series of ADRSA-sponsored events, and
- The Faculty Advisory Board

Examples of efforts to date include:

### ***Data Discovery***

- *Identification of Data and Reference / Advisory Services*  
Data resources may currently be owned by KU or an affiliated agency, held by another institution or a commercial vendor. To ensure successful service, ADRSA partners are developing closer relationships with subject bibliographers in the Libraries and with other agencies and institutions to locate datasets as required. In addition, ADRSA will take advantage of new federated search tools being implemented through the Digital Library to facilitate discovery of resources across a wide range of databases and websites. Specific initiatives include developing project relationships with the State of Kansas Geographic Information Systems Initiative's Data Access & Support Center (DASC, <http://gisdasc.kgs.ukans.edu/>) and with the Kansas Applied Remote Sensing program (KARS, <http://www.kars.ukans.edu/>)

- *Physical Access to Data and Computing Services*  
Academic Computing Services (ACS) maintains labs around campus that provide access to a variety of software packages useful for data research. More specialized tools and assistance are available through the ACS Statistical Consultant and Statistical Services Lab. The Libraries trialed a basic numeric data lab during spring semester 2002. Based on use and feedback, the lab has now been reconfigured into a new service, the GIS and Numeric Data Lab, which will open Fall 2002.
- *Data Extraction and Analysis Services*  
Following identification of appropriate resources, basic as well as specialized data extraction and analysis services are available for users. For example, ADRSA partners recently assisted in a project entitled "Shaping Corporate Environmental Behavior and Performance: The Impact of Enforcement and Non-Enforcement Tools". Data sources and subsequent variables were located and retrieved for the client with referral for specialized SAS analysis made to ACS and PRI. Feedback from the grant investigator cited ADRSA as "indispensable" to the project.
- *Data and scholarly communication*  
Working with faculty, researchers and subject bibliographers in the Libraries, ADRSA assists in identifying key data resources held outside of the libraries, and providing links to key support contacts. In cooperation with Digital Library Initiatives institutional repository efforts, partners will help outline procedures and standards for capturing, preserving and making accessible data created by KU researchers.

### ***Data Across the Curriculum***

- *Support of the curriculum* is one of the fastest growing service components of ADRSA. Initial feedback from the Faculty Advisory Group and other clients indicates that more development is needed here than in any other service component.
- *Creation of classes and instructional aides to support data use* including data management, ArcView, and Census 2000. Over the summer, a one-credit course in data management was offered by ACS and PRI staff; this fall, non-credit workshops on specific statistical and GIS tools are being taught by ACS and Library staff.
- *Integration of data instruction requests with regular instruction within the Libraries.* Key personnel involved in this effort include the Libraries' Instruction Coordinator and a variety of subject bibliographers. Integration into regular instruction sessions will emphasize the ubiquitous and cross-disciplinary nature of numeric and spatial resources.

- *Instructional and reference tools to assist clientele with the basics of data identification, acquisition and use at KU.* Once completed, these instructional tools and website will provide links and use instructions to databases like Voyager (the Libraries' catalog), other databases, Web sites, and institutions active in promoting data research worldwide.

### **Data Talk**

- *Education, Publicity and Marketing Activities*

Activities to facilitate awareness on campus include participation in the University's *Teaching Summit* conference this summer, presentations to faculty through the Center for Teaching Excellence, and individual department and classroom presentations.

### **Faculty Advisory Group**

- A *faculty advisory group composed of identified stakeholders* was formed in May 2002 to provide feedback and suggest future directions for ADRSA service development. Members represent such diverse areas as Geography, Anthropology, the Kansas Biological Survey, Economics, the Lifespan Institute, and the State Data Access Services Center (DASC).

### **ADRSA in Perspective**

While the ADRSA is a relatively new service on campus, a number of basic premises, service advantages, and future directions have become clear to the partners involved. These include:

- The fact that numeric and spatial data resources are created, purchased, stored, and made available to users by a wide variety of units in universities today.
- Significant access and resource efficiencies are not easily possible without implementing a campus-wide infrastructure for identification and sharing.
- Improving access and utilization of data includes facilitating the creation of shared standards and policies, and building formal relationships between units to provide a knowledge path to the resources and expertise available.
- The ADRSA partnership has provided a mechanism to leverage expertise residing in individual units into an improved service for the campus – a true example of the whole being greater than the sum of its parts. By “bridging the gap between data and discovery”, the ADRSA is providing a solid mechanism to improve services to users through a collaborative approach.

- The combined service profile has raised awareness on campus of the resources and assistance available – more so than any individual unit had been able to accomplish on its own.
- Efforts to optimize the service profile and eliminate overlap, as well as integration into the framework of a University initiative (i.e., the DLI), proved critical in not only retaining but allowing expansion of targeted services during a period of budget reductions in all units this year.
- Coordination through the Digital Library Initiatives has helped provide a broader context and framework for ADRSA initiatives and services. It has also provided a mechanism to participate in broader campus initiatives for resource discovery, standards adoption, institutional repository development, and policy development.

Based on our experiences to date, the Academic Data Research Services Alliance, (ADRSA), in cooperation with the Digital Library Initiatives at the University of Kansas provides an excellent cross-unit model that can improve the visibility and utility of numeric and spatial data services everywhere.