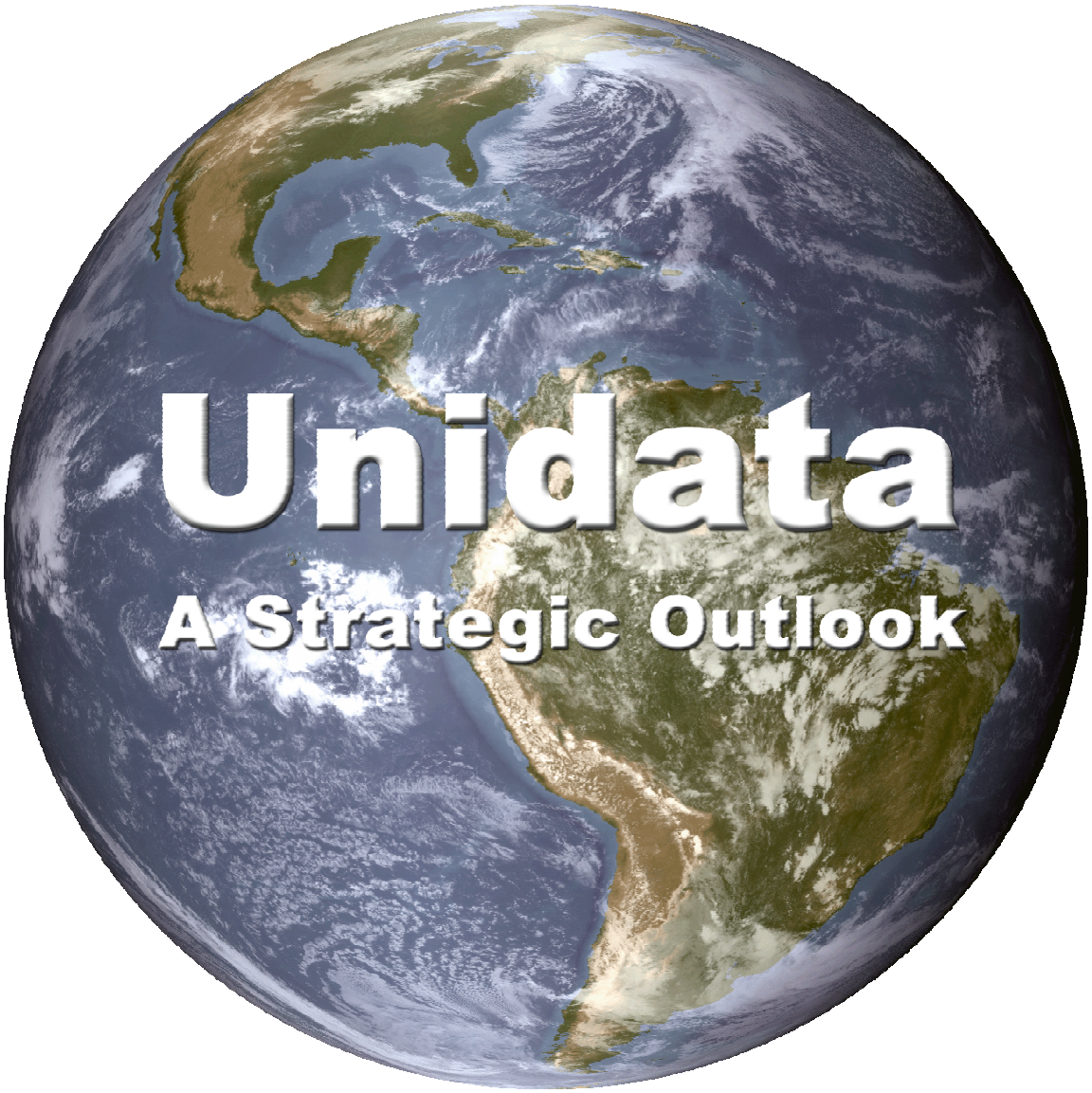



2007

unidata

The Unidata Program recognizes that a compelling **vision**, clearly stated **goals** and well articulated **strategies**, along with a strong team, sufficient resources and close partnerships, are critical to its success. This strategic plan presents bold and ambitious goals for the next five years.

While the scope and reach of the plan are intentionally broad, it is grounded to a well-established set of **core values** and **governing principles** that have guided Unidata since its inception. This plan is a forward-thinking natural evolution of a highly successful program built on twenty five years of experience as a national facility committed to providing responsible leadership, data services, tools and support to an **ever-expanding community** of users.

The plan is organized around **six focus areas** and presents concrete goals within each of those areas to further enhance Unidata's influence in and benefit to the **geosciences** community. This plan provides strategies for **charting the future course** that will inform the program's directions and activities. The Unidata Program will work hard to secure the resources needed to achieve these goals and fulfill its mission.

To maintain its **exceptional reputation** as an organization providing geosciences **cyberinfrastructure**, it is understood that periodic assessments, interventions, and course corrections will be needed as the plan is implemented and as external environment and community needs evolve.

# Mission

**To provide the data services, tools, and cyberinfrastructure leadership that advance Earth system science, enhance educational opportunities, and broaden participation.**

# Vision

**Unidata is the premier provider of seamless and comprehensive data services that help solve complex environmental problems facing science and society.**

*Implicit in this vision is recognition that Unidata will provide a broad array of end-to-end and well-integrated data services and contribute cyberinfrastructure that benefits a broader Earth system science community.*

*Unidata recognizes the importance of meeting sponsor needs, aligning its mission and goals with those of the National Science Foundation, Unidata's primary sponsor. In addition, the goals in this plan are congruent with national and community priorities, and will be anchored by the evolving community's needs and the program's core competencies.*

With guidelines provided in its mission and vision statements, the Unidata endeavor provides assistance to an organically broadening array of scientific activity that includes volcanology.

Throughout this document, no distinction is made between Earth system science and geoscience.

# Who we are and what we do

The Unidata Program Center (UPC) at the University Corporation for Atmospheric Research, sponsored primarily by the National Science Foundation, was founded nearly a quarter of a century ago to provide real-time weather data and related analysis and display tools to U.S. universities. Since then, the university meteorology community has come to rely on Unidata's broad portfolio of products and services, which are highlighted in the accompanying sidebar. In that period, Unidata has seen a gradual but natural evolution from a program focused primarily on the mesoscale and synoptic scale meteorology community to one that serves a broader geosciences community that has increasingly emphasized Earth system science (ESS) approaches. Today, over 170 academic and research institutions worldwide from many geoscience disciplines are participating in the Unidata data sharing network and using Unidata-developed tools and technologies to solve a range of complex environmental problems facing science and society. An independent metrics and assessment study of Unidata by an external consultant, conducted in 2006-07, concluded that Unidata is a vital community facility and that the sustained cyberinfrastructure provided by the program has helped to transform education and research in the geosciences.

Unidata's philosophy has always been to be an efficient and nimble organization that is focused on current and anticipated needs of its user community. To achieve that, Unidata emphasizes an actively engaged, community-centered process and community-based governance that provide a shared vision for the program and is the core foundation for its activities toward fulfilling its mission.

## As the enabler of a broad community, the Unidata Program Center:

- Provides a broad array of data, tools, and user services for accessing, using, and understanding ESS data
- Serves as a catalyst for solving community problems by exploring new technologies and developing innovative solutions
- Provides leadership in geosciences cyberinfrastructure
- Assesses community needs, and advocates on behalf of users on data issues, negotiating agreements to make available new data
- Enables student-centered learning by promoting use of data and tools in ESS education
- Advances and advocates for open standards, interoperability, and open-source approaches
- Engages in community building activities to promote data and knowledge sharing
- Works in close partnership with NSF to meet sponsor and community needs through a well-established cooperative agreement

We are a growing, diversifying program that leads and enables education and research communities in many ways. Shown above is a group shot of attendees at the Unidata 2006 Users Workshop whose focus was using models in classroom and other educational endeavors.

# An Environmental Scan

Societally important aspects of the Earth system such as climate change and water cycle transcend disciplinary and geographic boundaries; and their solution requires integrated Earth system science approaches. Contemporary education strategies recommend adopting an Earth system science approach for teaching the geosciences, employing pedagogical techniques such as inquiry-based learning. The resulting transformation in geoscience education and research creates new opportunities for advancement and poses many challenges. The success of the scientific enterprise depends heavily on the availability of a state-of-the-art, robust, and flexible cyberinfrastructure, and on the timely access to quality data, products, and tools to process, manage, analyze, visualize, integrate, and publish those data.

Concomitantly, rapid advances in computing, communication, sensing, and information technologies have revolutionized the provision and use of data, tools, and services. Those trends in technology also continue to shape the development of data services. For example, the advent of digital libraries, web services, open standards, and protocols have been important in shaping a new generation of cyberinfrastructure for solving key scientific and educational problems.

A new generation of in-situ and remote-sensing instruments, complex numerical models, and large databases, coupled with learner-centered Earth system science education strategies require state-of-the-art data services to ensure success of the scientific enterprise.

This environmental scan identifies three macro-level drivers to inform this strategic plan and shape Unidata's future—science, education, and information technology—that are described in the following section.

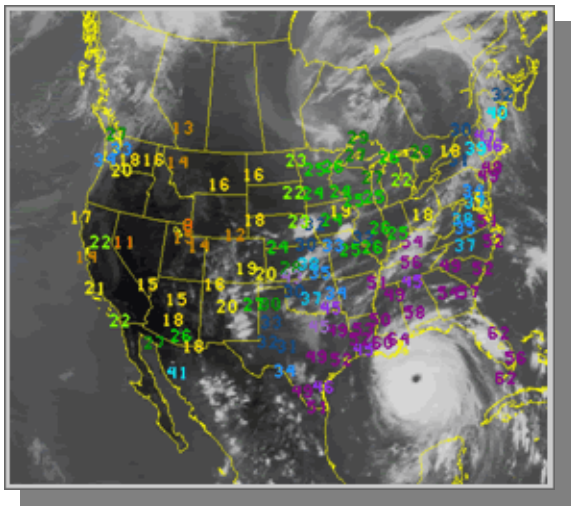
Working collaboratively with our community partners, we dedicate available resources to preserving, maintaining, and enhancing our earthly home's environment.

# Science

Science is a fundamental driver in defining Unidata's mission, and enabling science through the provision of data services and tools is its primary responsibility. For more than a decade, there has been a growing trend in the Earth and environmental science toward understanding the Earth as a synergistic system involving complex, multi-scale, interrelated phenomena and processes in the atmosphere, lithosphere, cryosphere, hydrosphere, and biosphere. Studying Earth system phenomena such as global change, including the role of natural and anthropogenic factors or understanding water cycle changes, requires interdisciplinary approaches, transcending disciplinary as well as geographic boundaries.

Understanding global environmental processes and their regional linkages has heightened the importance of full, open, and timely access to ESS data and strong international scientific partnerships. Furthermore, they require finding, collecting, integrating, and assimilating data and information from observations and model simulations from diverse fields and across traditional disciplinary boundaries. In addition to the increased globalization of science, the inherent complexities and interdisciplinary nature of ESS problems require that science be conducted collaboratively by distributed teams of investigators, often involving the use of community models and tools.

Advances in remote sensing methods, sensor technologies, and high-resolution coupled modeling systems are not only generating huge quantities of data, they are also driving a revolution in ESS research and education. The concept of a sensor web is an emerging area in the geosciences which broadly refers to the dynamic configuration of distributed sensors and observing platforms and associated adaptive strategies for real-time monitoring and management of resources.



Science is at the heart of all of Unidata's work. The satellite image of Hurricane Katrina in 2005 contains meteorological, hazardous weather, geographical, technological elements that facilitate prediction, education, and research. Overlaid on the image, generated by a Unidata tool, are integrated precipitable water observations from the SuomiNet GPS network.

In addition, long term monitoring of environmental conditions and prediction of natural hazards and their societal impacts continue to be at the forefront of research in the geosciences. Further progress in these and other areas is critically dependent on advanced computing and comprehensive cyberinfrastructure, including information architectures for the discovery, retrieval, integration, analysis, and visualization of diverse ESS data. Extracting knowledge from vast data collections is a crucial element in understanding the Earth system. As data volumes and communities grow, it is imperative that scalable, flexible, and efficient solutions are developed and deployed.

Data discovery continues to be an important dimension of the scientific method, complementing theory, experimentation, and simulation as the tools of the trade. It is essential to ensure that data are disseminated to diverse user communities that include environmental professionals, decision makers, and the public, to reap maximum benefit and help meet societal needs.

Future success will depend on how well researchers are served by tools and services that pertain to data discovery and use.

Unidata, broadly defined, recognizes these interdisciplinary trends, and this plan positions the UPC to be responsive to community needs by offering a balanced portfolio of tools and services that meet the scientific demands.

Unidata data products and visualization tools expand, extend, and enrich the scientific enterprise in increasingly diverse areas.

# Education

The Earth system approach views our planet as a single integrated system. Such a holistic view provides a powerful perspective for understanding the interconnected processes that drive the Earth and the myriad relationships between it and its inhabitants.

Earth science education can be advanced by incorporating new teaching techniques, active learning strategies, and real-world data into curricula. Students need opportunities for authentic, hands-on inquiry so that they experience the scientific process and excitement of discovery. A critical component of scientific inquiry includes learning to collect, analyze, synthesize, and interpret data to understand the underlying relationships, complexities, and uncertainties of the processes that control and shape the planet. This plan promotes this perspective by facilitating the integration of data via platform-independent data services and tools, common data formats and conventions, and democratization of access to data.

Earth science education is uniquely suited to drawing connections between the dynamic Earth system and the societal issues that make them relevant. Catastrophic events like the 2004 Indian Ocean tsunami and Hurricane Katrina provide abundant evidence of this relevance. These events underscore the importance of timely and interdisciplinary integration and synthesis of data from the several Earth science disciplines.

Cyberinfrastructure provided by Unidata allows students to access the exact same databases and tools used by the scientific community, providing an important pathway to integrate research and education. The richness of students' exploration and experience depends on the quality of the data available and the tools students use. Unidata recognizes that sustained efforts in enabling technologies are critical to realizing the vision of a well-developed workforce. This plan promotes developing and deploying such data services and tools.

Unidata empowers faculty and students by providing tools for genuine inquiry and hands-on experience, while infusing the excitement of discovery into many geoscience courses as shown in this hands-on classroom at a community member site.

# Information Technology

Throughout its history, information technology (IT) advances have shaped Unidata's activities and the ways in which the program has served its community. The boxes below list some of the IT developments that have informed Unidata's work, and the UPC has implemented many of those technologies for the advantage of the community.

The Internet is playing a central role in everyday life, radically transforming the conduct of business, access to information, and resources for education. The World Wide Web has enriched and enhanced the provision of services by shifting away from centralized approaches toward a more scalable, user-centric model. It has democratized Internet use while providing interactive and customized services and changing the paradigm for searching, sharing, and delivering data, products, and educational materials.

Platform-independent Web services, usually implemented in service-oriented architectures, have emerged as tools for providing a new generation of data services. Such services can be standalone, performing simple tasks, or they can be linked to create more complex services.

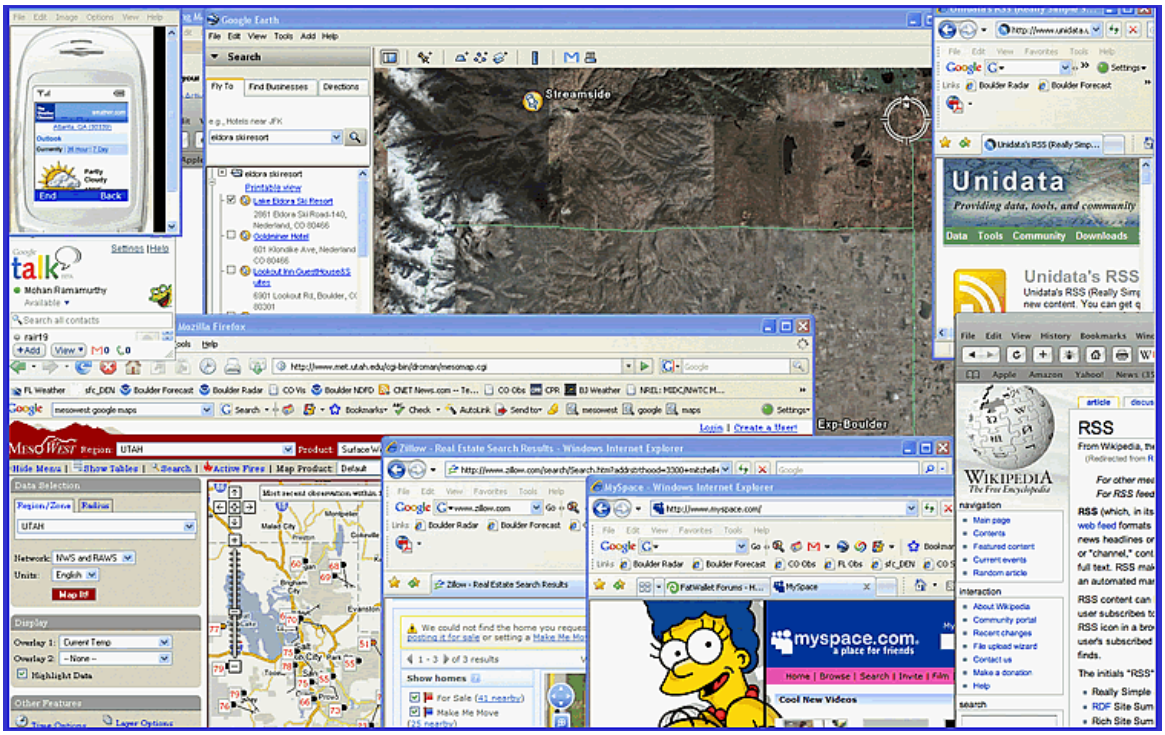
The second generation web services referred to as Web 2.0 harnesses the network using it as a platform for deploying a new cadre of applications. Through creative integration of pre-existing tools and services, Web 2.0 has made it possible to provide even richer, customized services, such as interactive mapping and tagging, and overlaying of scientific and societal data.

- Internet
- World Wide Web
- Personal computers and PDAs
- Commodity microprocessors
- Broadband and wireless networks
- Object-oriented programming
- Open standards and open source approaches

- Web services, Web 2.0, and Sensor Web
- Geographic Information Systems
- Digital libraries
- Virtual organizations
- Social networks
- Grid Computing/e-Science

These and other information technology capabilities are essential to today's scientists, educators, and students. We recognize that technology is only an enabler and catalyst. The above information technologies enhance Unidata's ability to serve the community in innovative and efficient ways and help transform scientific discovery, learning, and workforce development in the geosciences.

To that end, Unidata will continue to closely track, leverage, and implement these and other technological solutions needed to meet community needs and toward realizing the stated vision.




As the second generation web services come online, Unidata will continue to provide innovative and efficient technologies to leverage them. To illustrate the diversity, complexity, and nearly-unlimited potential of Web 2.0, we offer a visual collage of selections.

# Core Values

Unidata's core values, which are the essential and enduring tenets of the program, have a profound impact on, and remain critical to, the UPC's success. They are central to how the UPC operates, providing a framework for guiding its practice. In essence, this well-established set of core values underpins Unidata's culture and drives all aspects of its activities, including governance, structure, and interactions with all stakeholders.

These values reflect Unidata's unique history and the ongoing evolution of the community. They have been advanced and refined to reflect changes in the environmental landscape. It is understood that the program affirms, embraces, and is accountable to core values stated in this plan.

The changes implemented in this plan will preserve the core values. Growth will be organic, not forced. New efforts will be undertaken only when sufficient resources are available to assure their success without degrading service to the existing community.

Fundamental core values inform Unidata's choices and decisions.

The following list of core values reflects what is truly important to Unidata as an organization.

Focus on People - The UPC will:

- recruit, develop, and retain the right mix of talent to fulfill the mission
- engage the community to provide governance and strategic direction

Leadership - The UPC will:

- align itself with the current and future needs of the community
- achieve buy-in of the Unidata vision, values, and goals
- undertake the right research and development at the right time and at the right investment
- empower users to advance geoscience education and research by investing in enabling ideas and innovations

Manage Research and Development - The UPC will:

- ensure excellence
- maintain the proper balance between research and development
- leverage external resources through strategic partnerships, and capture and benefit from organizational learning

Organizational Performance - The UPC will:

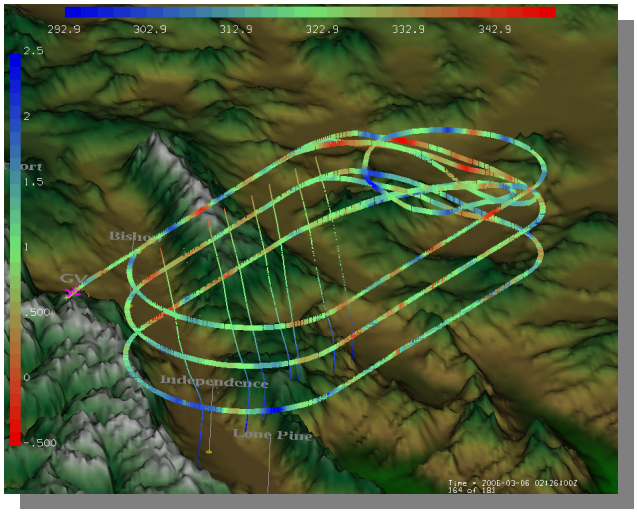
- build on its strong reputation to strive for high level of performance to meet the needs of those who depend on it for results

# Focus Areas

This strategic plan defines six main goals to pursue for enhancing an already strong program and carrying out the mission. The goals stated within the six focus areas represent a cross-section of Unidata's endeavors and provide a broad framework for what Unidata intends to accomplish in the next five years. The development of these focus areas is guided by Unidata's core values and the need to implement the most synergistic match between community needs and Unidata's capabilities.

The focus areas and goals, along with the rest of the plan, were developed through a broadly participatory and collaborative process that entrained staff and community input. As with any strategic plan, the goals will be refined, and details on tactics will be added as the plan is implemented and the UPC assesses progress toward achieving the stated vision.

- **Community**
- **Data Services**
- **Tools**
- **Communication and Support**
- **Cyberinfrastructure Leadership**
- **Diversity**




The Unidata Integrated Data Viewer generated image of one of the HIAPER aircraft's tracks with dropsondes during the T-Rex field project is an illustration of Unidata's commitment to its six organizational focus areas.

# Community

Direct community input and engagement in every aspect of Unidata continue to drive the program's success.

Unidata's core community includes geoscience researchers, educators, and students in higher education, unconstrained by international boundaries. By successfully meeting the needs of this historical core community, Unidata has attracted a second tier of stakeholders who are either data providers or users. These include federal agencies and laboratories, other levels of public education, and the private sector.

Solutions to complex scientific challenges require creative, interdisciplinary and collaborative approaches. An organically broadening community will play a larger role in Unidata's future. Unidata will remain nimble in anticipating, responding to, and transforming with changing social and community demands.

The UPC will work with domestic and international partners to provide reliable geoscientific data and analysis tools to advance the understanding of Earth system processes.

## Unidata Goals

- Foster a strong sense of community ownership of the program and create a framework for capturing community input
- Bring the community and stakeholders together to address problems that are important to them
- Develop a global partnership with geoscience data holders for free and open sharing of data
- Monitor the pulse of the community and advocate on its behalf on data and cyberinfrastructure issues
- Bridge communities across a range of computing resources and capabilities

From a community focused on delivering weather data to U.S. universities, Unidata has expanded to deliver those data to an increasingly global community of universities, government laboratories, and private industry. Each super-imposed image shows a geographically diverse location for Unidata's impact.

# Data Services

Earth system research and education are inherently multidisciplinary in nature. They require comprehensive data services that provide integrated access to diverse sources and formats of high-quality data for advancing our scientific understanding and creating new knowledge. Providing flexible, easy-to-use data services reliably and efficiently is a cornerstone of Unidata's mission.

The rapid explosion of geoscience data volumes and their increasing complexity pose challenges for data discovery, management, integration, analysis, and interpretation. These data must be converted into knowledge to advance the frontiers of science.

In response to the challenges, this plan calls for Unidata to apply both established Internet technologies and other recent and emerging approaches—web services and mash-ups[1] for example—that foster creation of rich digital services and custom content by combining existing web services to meet the evolving needs of an increasingly diverse and global community.

This plan also recognizes the need for the seamless integration of data from diverse sources.

The data must be linked with appropriate component services through common workflow engines to create even richer and more powerful data services that enable new capabilities to advance scientific exploration, discovery, and knowledge creation.

## Unidata Goals

- Develop and provide high-level interfaces to geoscience data as well as simple mechanisms for locating, accessing, and distributing real-time and thematic data, creating and publishing metadata, and notifying data availability
- Adopt, develop, and promote open standards, conventions and protocols for data formats, access, and metadata to enhance interoperability of data services
- Facilitate seamless integration and analysis of data from diverse sources, including GIS information
- Enable users with data holdings to contribute and share their data easily
- Empower community members to create and deploy innovative data services using web services and mash-up technologies
- Provide extensible frameworks for creating next generation, dynamic case study datasets

[1] A mash-up is a website or application that combines content from more than one source into an integrated experience.

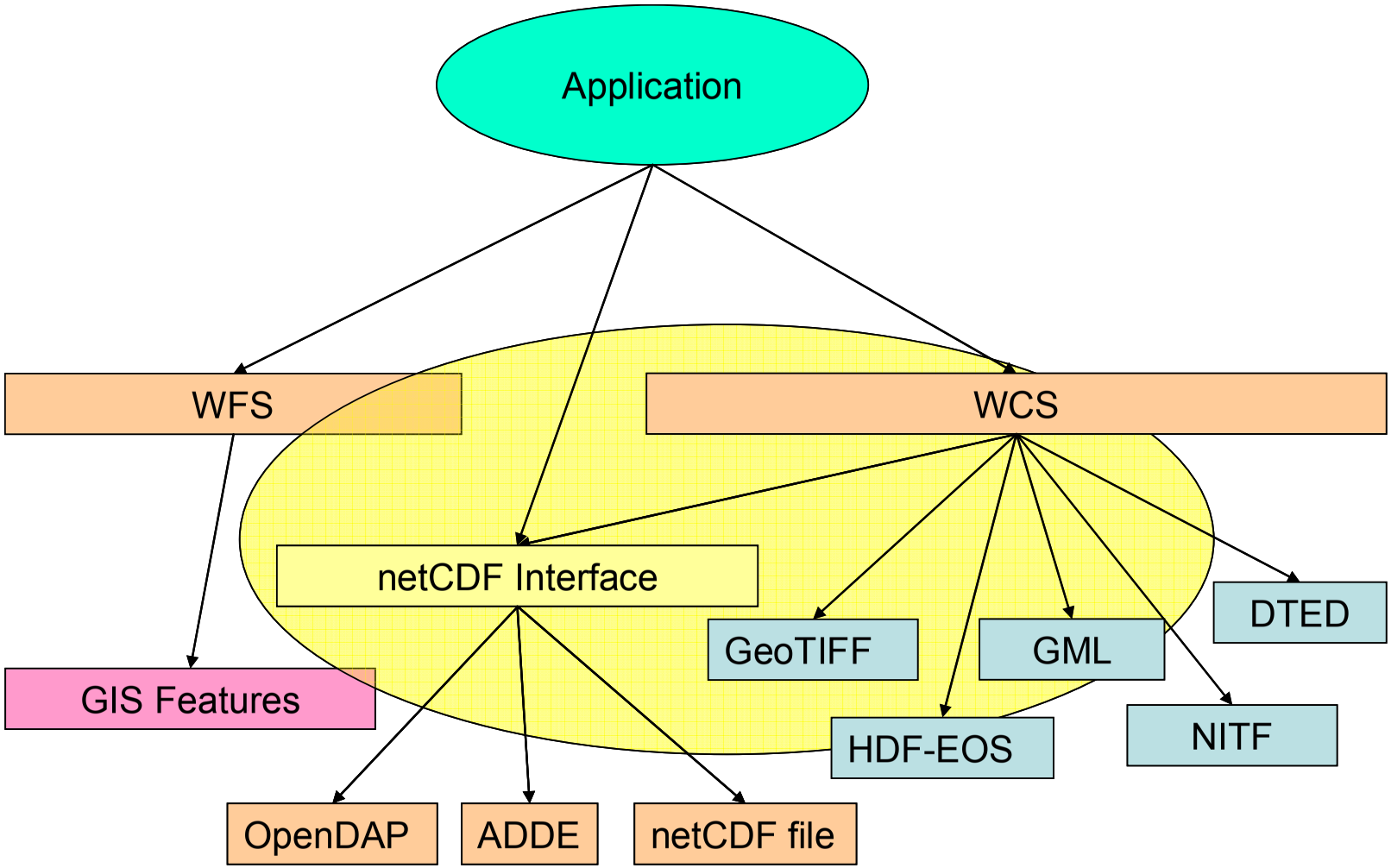



Diagram illustrating the Common Data Model, a middleware developed by Unidata, that enables the provision of interoperable data services.

# Tools

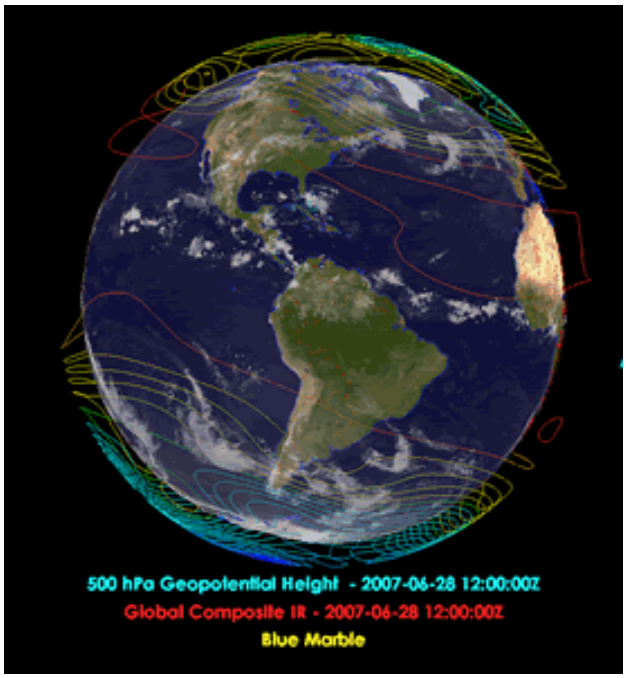
Unidata's reputation is most strongly linked to the high-caliber, easy-to-use, and robust software tools that are used to access, analyze, visualize, integrate, interpret, and synergistically stimulate discovery and facilitate advances in geoscience research and education.

As part of its software development philosophy, Unidata emphasizes object-oriented, platform-independent and open-source approaches to tool development, and embraces open standards for broad and transparent use of its systems. Unidata seeks opportunities for leveraging, as appropriate, external development in tool building. As a result, some tools are developed at the Unidata Program Center, while others originate elsewhere, but are modified, maintained, and supported by the UPC.

Rapid advances in observational technologies and modeling are yielding new types and massive amounts of data. Fusion of those diverse data and efficient handling of their ever-increasing volume to enable interdisciplinary synthesis and development of knowledge becomes a central priority.

## Unidata Goals

- Further develop and expand the scope of tools offered to facilitate the transformation of research, education and outreach in the community
- Build and provide tools such that users are able to contribute geoscience data and metadata
- Provide frameworks and components to build and adapt tools to increase the use and value of geoscience data
- Facilitate interdisciplinary integration and synthesis of data and products via commonly used community and GIS tools




Unidata's tools provide the means for creating visualizations of complex data analyses. The blue marble image conveys the sense of the potential for broad-spectrum use for the tools.

# Communication and Support

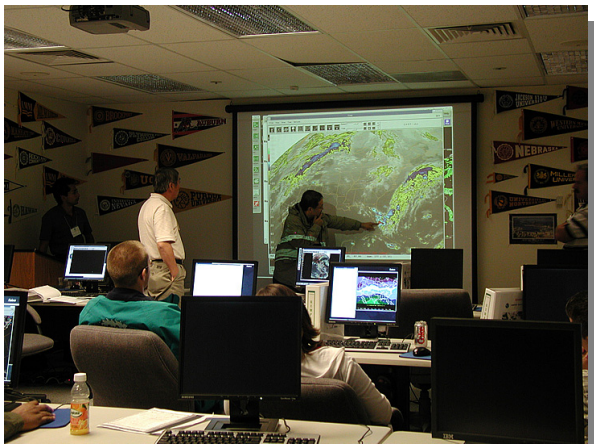
Effective communication with and support for its community, sponsors, and other stakeholders is integral to Unidata's mission and its daily operation. Strategic communication not only informs and educates the community about the myriad program activities, it also engages community members as active participants. Furthermore, communication helps to clarify Unidata's goals and priorities.

Unidata's communication methods match user needs and preferences. These include traditional print media, e-letters, an interactive website, topical mailing lists to targeted audiences, Really Simple Syndication (RSS)[2] feeds, online forums, and webcasts. Unidata staff routinely disseminate program activities and results and receive feedback at various national and international meetings, and community workshops.

Unidata is widely known for its exemplary support to its core community and superior training to optimize the use of its tools. As Unidata moves forward with a comprehensive portfolio of activities to benefit a growing community, maintaining the excellent support for all users is crucial.

## Unidata Goals

- Maintain and advance effective communication methods with and amongst community members to augment and advance program goals
- Provide high-quality support to the community through multiple modalities, harnessing, as needed, advances in online collaboration technologies
- Provide excellent training and documentation on Unidata tools and services through traditional and innovative methods
- Cultivate a mutually supportive environment to foster community interaction, and sharing of data, tools, knowledge, and expertise



Support from Unidata comes in many forms that include focused e-mail lists, training workshops, site visits, and conference presentations and booths. Training workshops, like the one shown here, are among the most effective.

[2] RSS, Really Simple Syndication, is a format for delivering regularly changing web content.

# Leadership in the Application Of Cyberinfrastructure

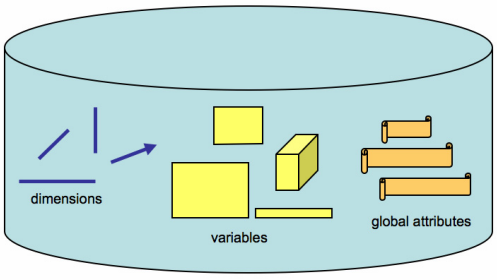
Internet technologies have amply demonstrated the compounding benefits of a global cyberinfrastructure and the power of networked communities as people and institutions exchange knowledge and resources.

Unidata recognizes that providing robust, comprehensive, and persistent cyberinfrastructure is essential to transforming geosciences education and research. Unidata's mission includes developing and providing state-of-the-art data services, cutting-edge end tools and middleware, as well as playing a leadership role in geosciences cyberinfrastructure issues.

The program takes an active role in bringing communities together to address important cyberinfrastructure issues by organizing national and international meetings. In addition, Unidata plays a prominent role in standardizing conventions and data formats and leads efforts to integrate geosciences data with GIS databases.

## Unidata Goals

- Take a leadership role in setting future directions for geoscience cyberinfrastructure, working closely with all stakeholders
- Continue to advance geosciences cyberinfrastructure by developing and providing cutting-edge data services and tools to meet user needs
- Create a virtual intellectual commons for the community and testbed for developing and deploying advanced technologies to perpetuate transformation in the community's productivity and capabilities
- Provide stewardship for and facilitate development, adoption, and implementation of standards, data formats, conventions, and protocols




Unidata is a leader in cyberinfrastructure development and supports its evolution. This schematic illustrates the makeup of netCDF files that are containers for Dimensions, Variables, Attributes, and Data.

# Diversity

A large body of research has enumerated the importance of and the immediate need for enhancing diversity in STEM (Science, Technology, Engineering and Mathematics) fields, including the geosciences. Many barriers to diversity in STEM fields exist. An example is inadequate access to infrastructure and resources that have prevented a broad segment of the population from full participation in the geosciences.

Unidata supports and nourishes inclusiveness and gender and socioeconomic diversification. SOARS, a UCAR program to promote gender and ethnic diversity in Earth system science, provides Unidata staff with opportunities and challenges to mentor talented young scientists like Shanna-Shaye Forbes.

Because of its central role in providing easy access to data, simple-to-use tools, and enhancing communication, Unidata is uniquely positioned to enhance participation of diverse populations in the geoscience enterprise and help the NSF to achieve its STEM diversity goals. Diversity is woven in the very fabric of Unidata activities, not only to enhance the vitality of the program through new perspectives and applications, but also to sustain and contribute to its long term value. The geosciences workforce is diversifying and becoming more global. In addition, a majority of the underrepresented students begins its post secondary education in community colleges. Unidata recognizes the trend and plans to respond accordingly.

Providing broad access to technology and services, with minimal entry barriers is a key element in enhancing diversity. Another dimension is making science relevant to local environments and experiences. This strategic plan offers a pathway to address the diversity challenge.

## Unidata Goals

- Engage a highly diverse population of educators and researchers as core constituents through outreach efforts
- Foster alliances between traditional Unidata universities and community colleges and minority-serving institutions to address under-representation
- Lower barriers to using Unidata data services, tools and services
- Develop and promote specific opportunities that broaden participation from underrepresented-communities

# Governance

Established by and for the community, Unidata has always placed strong emphasis on community-based governance. Its governing committees facilitate consensus building to meet the needs of users and other stakeholders as well as help set future directions for the program.

The Policy Committee makes recommendations to the UCAR President and the UPC Director on Unidata's policies, goals, and activities. The Users Committee is the primary mechanism for gaining community feedback on the effectiveness of the program. It solicits suggestions for additions to existing data streams and tools, facilitates the exchange of ideas among users, and provides input to the program on a range of user issues. Members for both committees are selected to represent a range of colleges and universities and to serve three-year terms. The Policy Committee includes representatives from federal agencies, and from sister programs and divisions in UCAR and NCAR to bring wide-ranging perspectives in guiding the program.

In addition to the two above committees, Unidata recognizes the key role of and strong partnership with NSF and other agencies in its governance, facilitated by a well-established Cooperative Agreement between UCAR and NSF.

## Unidata Goals

- Continue the strong emphasis on community-based governance where committees facilitate consensus building to meet the needs of users and other stakeholders
- Continue the strong cooperative partnership with NSF to meet community needs and support NSF's goals
- Ensure that the NSF and Unidata governance committees are the primary mechanism for gaining community input

Governing committees meet at least twice yearly to contribute to solutions and directions for the program center.

# Unidata Governing Committees Membership

### Unidata Policy Committee Members

- Steven Businger – University of Hawaii
- Richard Clark – Millersville University
- Jeff de La Beaujardiere – NASA Representative
- Jack Fellows – UCAR Representative, UOP
- Bernard Grant – Sponsor Representative, NSF
- Rudolf Husar – Washington University
- Cliff Jacobs – Sponsor Representative, NSF
- James Koermer – Plymouth State University
- Gary Lackmann – Users Committee Representative, North Carolina State University
- Paul Ruscher – Florida State University
- Tim Spangler – Observer, UOP/COMET
- LeRoy Spayd – NOAA/NWS Representative
- Gene Takle – Iowa State University
- David Tarboton – Utah Water Research Laboratory
- Roger Wakimoto – Observer, NCAR/EOL
- Steve Worley – Observer, NCAR/CISL

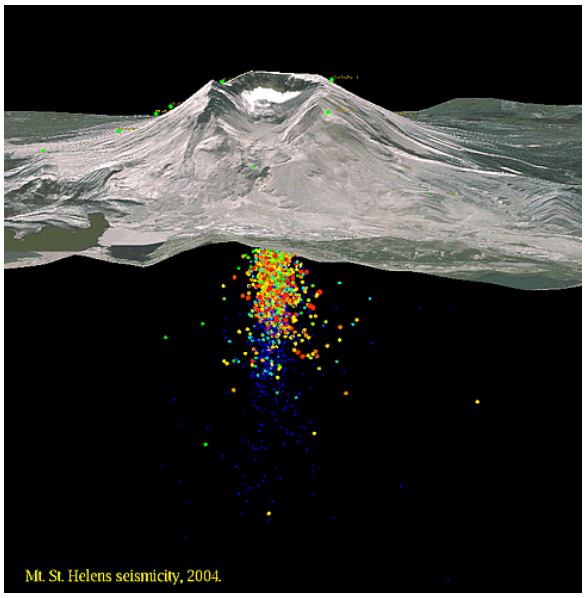
### Unidata Users Committee Members

- Sean Arms, Student Representative – University of Oklahoma
- Eugene Cordero – San Jose State University
- Elen Cutrim – Western Michigan University
- Christopher Herbster – Embry-Riddle Aeronautical University
- Kevin Knupp – University of Alabama, Huntsville
- Anton Kruger – University of Iowa
- Gary Lackmann, Chair – North Carolina State University
- Leigh Orf – Central Michigan University
- Scott Rochette – SUNY College at Brockport
- Tom Whittaker, Technical Representative – University of Wisconsin, Madison

# Strategies for Achieving Goals

Planning based on clearly articulated goals is central to the success of any organization. The stated goals will not be realized without a clear strategy which must be integrative, taking into account all existing programmatic variables.

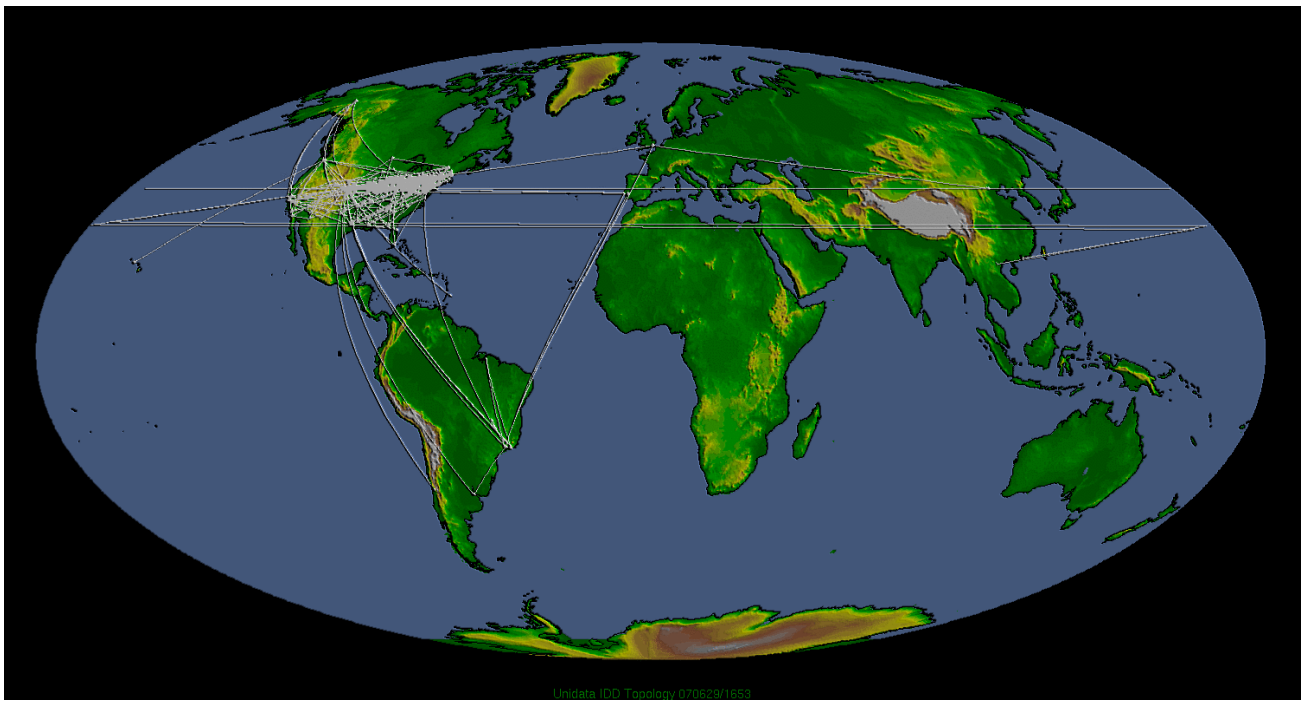
The following strategies will be applied to achieve the goals stated in this plan. While the list is only partial and not intended to be comprehensive, it, nonetheless, establishes broad themes for future actions and tactics and reflects Unidata's overall philosophy and guiding principles.




The image is a GEON-IDV produced image of Mt. St. Helens quakes (2004) from north oblique angle, and is indicative of Unidata's ability to achieve its goals.

Photo Credit: UNAVCO and The Pacific Northwest Seismic Network

- Engage the community so that members are not only participants but also contributors to the enterprise
- Forge strategic alliances and partnerships with key stakeholders
- Carve out and focus on the Unidata niche, sustaining and building on the strengths of the core program
- Serve the community more efficiently and effectively by proactively searching for ways to implement needed changes
- Emphasize platform-independent and object oriented approaches that enable software reuse in multiple contexts
- Adopt and adapt existing technologies, developing new ones only as a last resort
- Create and foster self-organizing support communities, while cultivating an intellectual commons for constituents
- Pursue funding opportunities and leverage external resources where appropriate




Data distribution by Unidata has assumed a global presence since the program's inception. The figure shows the IDD data sharing network.

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