

**Rutgers, The State University of New Jersey**

**Strategic Plan for  
Rutgers University Computing Services**

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## **Computing Services at a Glance**

### **Historical Highlights**

- Computers first used at Rutgers to process student registration materials, accounting, payroll – 1940s
- First academic computing hardware installed - 1950s
- Center for Computer and Information Services (CCIS) established on each major campus; Administrative Information Services established – 1960s
- Rutgers connected to ARPANET (forerunner of current Internet) – 1973
- Administrative Information Services renamed Center for Computer and Management Services (CCMS) - 1975
- Creation of first computer labs at Rutgers – 1980s
- Rutgers University Computing Services formed as central computing unit of university, combining CCIS and CCMS - 1990

### **Computing Services Today**

- 6 divisions
- 24 public computer labs
- 38 online administrative applications
- 1.4 terabytes of disk space for email, file storage, and web pages
- 345 Mbps bandwidth to the Internet
- 500 buildings connected to RUNet
- 33,000 hosts connected to RUNet

## Overview

In 1995, Rutgers, The State University of New Jersey, embarked on a bold strategic plan, "A New Vision for Excellence," to prepare Rutgers to become one of the top-ranked public research universities in the nation by the year 2010, and to achieve its goal of offering academic excellence in instruction and scholarship to the increasingly complex environment it serves. Achieving these goals will enable Rutgers to meet the present and future needs of the state for a highly educated work force, for lifelong access to education, for economic progress through scientific and technological innovation, and for service to citizens in a diverse, democratic society.

The university's strategic planning process, an extensive and collaborative process with the Rutgers faculty, pointed out an important truth about the future of the university: that Information Technology is necessary to transform the university to meet these ambitious goals under its mission as a public research university. The successful modern university uses computers and the Internet to improve its delivery of services to students and other constituents, to enhance interaction between faculty and students both on and off campus, and to enable researchers to communicate and collaborate with colleagues around the world.

Strategic-planning efforts have recognized the transformational role of information technology resources on the entire higher educational enterprise. Information technology resources and a new generation of scholarly tools are rapidly becoming part of the core educational infrastructure at Rutgers University and need to be meshed with the missions, priorities and goals of the institution.

To accomplish the mission of the university:

*Excellence in teaching and learning, research and discovery, and public service and engagement,*

Information Technology is instrumental. Recognizing this, the university's strategic plan states that:

*Computer and information technology will be integrated into the curricula, pedagogy, and administration of the university in order to provide our students with the knowledge and skills they need in the Information Age and to furnish the university with the tools it will need to function in this new era.*

Rutgers University Computing Services (RUCS) has built on the direction for Information Technology stated in the university's strategic plan in developing the organization's mission:

*To provide university-wide leadership in Information Technology and quality Information Technology services in support of the university's mission.*

RUCS is the university's centralized computing and telecommunications support organization. The organization consists of three campus-based divisions - one at each of the university's regional campuses in Newark, Camden and New Brunswick - and three university-wide organizations supporting administrative computing, telecommunications, and information protection. RUCS staff members provide support for voice and data networking services, centralized batch and timesharing computing platforms, administrative applications software, and instructional computing resources.

Following the blueprint outlined in the university documents, Computing Services has developed a set of strategic goals that drive the organization to realize its vision and that support the mission of the university.

These goals and the associated implementation strategies are the first result of a new, multi-year strategic planning process. The process so far has involved RUCS directors, staff, and members of the university community. Directors and their staffs responded to questionnaires about the current status of the organization and its services and areas for improvement. A retreat to analyze these data and to determine area of focus followed. Outcomes included a decision making process and assigned proponents for each RUCS project and new technology investigation. Subcommittees were then formed to investigate customer needs, emerging technologies, and human and financial resources. Based on the findings of the subcommittee studies, strategic goals were drafted, reviewed by staff and directors (individually and as members of focus groups) and revised for further evaluation. Implementation goals were then drafted, reviewed, and revised.

In parallel with this process, RUCS leadership has worked with the Information Technology Coordinating Committee (ITCC) to identify areas that require more specific strategic planning. During Fiscal Year 2003, RUCS and the ITCC will work with the University community to develop strategic analyses of these key areas. The areas identified include the following:

- Capitalize on RUNet infrastructure, e.g. identifying resources for transition, support maintenance, and evergreening. Investigate a possible phase II.
- Identify development priorities for administrative applications, to maximize the results of investments in RIAs.
- Identify the best areas for development of university-wide IT products, e.g. courseware, degree audit, email, and integrated administrative systems.
- Support university-wide IT decision-making and prioritization.
- Promote the development of uniform practices and procedures to streamline processes and derive most benefit from IT and infrastructure capabilities.
- Identify IT roles and responsibilities and understand the overlap and differences between RUCS and the departments.

The following summarizes RUCS' overall strategic goals:

#### **1. Facilitate achievement of Rutgers teaching and learning mission**

- Provide technology support for the learning process
- Design, develop, and maintain IT infrastructures to enhance the transfer of knowledge
- Present new opportunities for the use of technology in teaching and learning
- Provide administrative and other computing support for teaching and learning

#### **2. Facilitate achievement of Rutgers research and discovery mission**

- Provide IT support to enhance the investigative process
- Design, develop, and maintain IT infrastructures to enable researchers to communicate and collaborate with their colleagues
- Present new opportunities for the use of technology in research and discovery
- Provide administrative and other computing support for research and discovery

### 3. Facilitate achievement of Rutgers community engagement mission

- Promote opportunities for communication and collaboration within and between the institution, its alumni, and the community
- Partner in the creation of New Jersey's educational infrastructure through development of common technological resources
- Establish effective relationships beyond the immediate community for promoting the purpose and interests of Rutgers University
- Provide administrative and other computing support for community engagement

### 4. Facilitate improvement of the quality of university life for members of the Rutgers community

- Provide effective two-way communication about RUCS, its services, guidelines, and policies  
Provide tools and approaches for a secure IT environment
- Establish and communicate quality of service standards for RUCS' core and fee-based services
- Provide administrative and other computing support to improve the quality of university life for members of the Rutgers community

Key themes that underlie all of these goals are summarized below:

**Communications:** As RUCS plans its next generation of services, it is critical to involve the University community. This will require careful communication in both directions. RUCS needs involvement by the community to help set goals. But it is also important to communicate services and plans to the community.

**Definition of responsibilities:** With every new generation of technology, the boundaries between different services change. So does the appropriate tradeoff between central and decentralized services. It is important for RUCS to develop a shared understanding with the University community about what is expected from RUCS and from other parts of the community. There are opportunities for RUCS to provide new central services that will provide significant benefits to departments and other units around the University. These are reflected in several new and improved central services, such as the mail/calendar project, central support for departmental applications that use online payments, and improvements in areas such as class rosters and grade reporting. On the other hand, as information services continue to play an increasingly critical role in operations of the University, there are also needs for improved support services for departmental staff. This is reflected particularly in the security area.

**Security and Information Protection:** For several different reasons, security is becoming an increasingly important area, both for RUCS and for units throughout the University. At the same time that the University is moving most of its information online, the Internet is becoming an increasingly hostile environment. Several of the goals reflect this: RUCS is moving to new, more secure architectures for its own services, both in the administrative area (pioneered by the extensive security effort for RIAS) and in the academic area (with a move towards more secure protocols and architectures). RUCS has several services designed to help departments with security and other protection issues: This includes new training programs for departmental staff, a new support effort to help departments develop security and information protection plans, as well as regular scanning for security problems with systems around the University.

**The Network and Network-based services:** The network continues to be a high priority for RUCS. There are several projects to improve the network architecture, providing improvements in reliability and performance, e.g. integration of the legacy network into the new RUNet infrastructure, and involvement in the Rutgers Regional Network, NJEdge, and

Internet 2. In addition, it is important to continue development and early deployment of key new technologies such as wireless networking and video. One particular area that is being emphasized is directory services and authentication. The industry is moving in the direction of directory-enabled applications with common authentication. RUCS is putting the necessary services in place to support this type of application. Among the most visible results are the new term "NetID", and the use of common authentication for RIAS and academic services.

**Access to Administrative Data and Applications:** RUCS is currently planning and implementing the next generation of administrative applications. These emphasize web access and use of standardized tools such as Oracle Explorer, to provide improved access to centrally-maintained information, and a more usable user interface. A major priority has been to leverage existing administrative data by providing new applications based on it. However there are limits to this approach. At some point it becomes necessary to replace decades-old mainframe applications. RIAS is the first step. RUCS will work with the ITCC to develop a continuing strategy in this area.

**Continued service quality:** This report emphasizes new activities. However it is important not to lose track of the importance of continued reliability and performance for existing applications, as well as incremental developments to take account of changes in the environment both inside of the University and out. It is also important to look at approaches to move services from old to new technology. The University will not be able to take advantage of new technology unless it can move resources from old ones. Some of the most visible examples during the next year will be the transition to the new RUNet backbone, transition to RIAS, and moving central email users to new, more secure email interfaces.

## Implementation Strategies – Year 1

In keeping with the organization's vision, to be:

*A role model within the higher education community for customer satisfaction and service excellence using innovative strategies and advanced technologies, through a unified multi-faceted approach,*

Computing Services has defined the following as its goals for fiscal year 2003:

### 1. Facilitate achievement of Rutgers teaching and learning mission

#### a) Provide technology support for the learning process

We will support the development of IT-based teaching and learning through implementation of standardized resources and applications. We will develop support models and articulate our relationships with students, faculty, staff, departments, centers, colleges and schools.

*Specifically, we will:*

- Collaborate with Teaching Excellence Centers and faculty to define a standard tool for web-based instruction. Develop support mechanisms for the selected tool
- Clearly articulate what students, faculty, staff, departments, centers, colleges, and schools can expect from RUCS and what services we will provide
- Outreach to faculty and students to better understand what we can do to assist them in accomplishing their teaching and learning goals
- Work with ITCC to develop a university-wide planning structure for instructional support

#### b) Design, develop, and maintain IT infrastructures to enhance the transfer of knowledge

We will create, maintain, and encourage the use of IT infrastructures to facilitate electronic communication and collaboration among and between students and faculty. We will provide seamless access to distributed services and information repositories.

*Specifically, we will:*

- Develop a university-wide authentication mechanism and educate the university community about its benefits
- Develop and pilot next-generation email and calendaring service
- Continue to make improvements in the operation of the public computing labs
- Maintain and upgrade RUNet and begin development of Rutgers Regional Network
- Facilitate collaborations among Rutgers faculty and students through further development of RUNet and the Rutgers Regional Network
- Lead transition from legacy to RUNet infrastructure in partnership with departmental computing personnel

#### c) Present new opportunities for the use of technology in teaching and learning

We will support standard IT environments for the integration of online resources into teaching and learning. We will provide training toward the application of technology in learning.

*Specifically, we will:*

- Pilot the use of wireless technology on all campuses
- Create and support standard central services, such as web courseware and streaming video, in support of teaching and learning
- Expand technology training in areas of need identified by faculty and students

d) **Provide administrative and other computing support for teaching and learning**

We will provide and support a set of well-defined IT services to facilitate teaching and learning. We will maximize opportunities for use of web and other state-of-the-industry technologies for activities that support teaching and learning.

*Specifically, we will:*

- Expand availability of web-based payment systems
- Provide administrative data for integration with course management tools
- Maintain and improve access to online applications such as course rosters, grades, transcripts, schedule of classes, and course registration

**2. Facilitate achievement of Rutgers research and discovery mission**

a) **Provide IT support to enhance the investigative process**

We will design services and systems to provide capabilities for collaboration in research and information management. We will develop support models and articulate our relationships with students, faculty, staff, departments, centers, colleges and schools.

*Specifically, we will:*

- Expand technology training in areas of need identified by faculty and students
- Clearly articulate what students, faculty, staff, departments, centers, colleges, and schools can expect from RUCS and what services we will provide
- Outreach to faculty and students to better understand what we can be doing to assist them in accomplishing their research and discovery goals
- Provide improved data storage capabilities

b) **Design, develop, and maintain IT infrastructures to enable researchers to communicate and collaborate with their colleagues**

We will construct facilities using contemporary communications technologies and services to enhance the collaborative experience between members of the research community.

*Specifically, we will:*

- Maintain and support Rutgers connections to the Internet, Internet2, and NJEdge.Net
- Facilitate collaborations among Rutgers researchers through further development of RUNet and the Rutgers Regional Network
- Investigate the development of advanced communication technologies and make available for research applications
- Lead transition from legacy to RUNet infrastructure in partnership with departmental computing personnel
- Develop and pilot next-generation email and calendaring service

c) **Present new opportunities for the use of technology in research and discovery**

We will provide the research community with resources to facilitate their investigations through central computing facilities and services. We will investigate new opportunities for use of IT by the research community.

*Specifically, we will:*

- Continue to maintain and support Rutgers connections to the Internet and Internet2
- Work with faculty groups to determine technologies needed to support research, such as encryption technologies and new operating systems
- Investigate collaboration with other university entities to sponsor a research computing symposium for Rutgers faculty and students

d) **Provide administrative and other computing support for research and discovery**

We will provide and support a set of well-defined IT services to support research and discovery.

*Specifically, we will:*

- Develop relationships with academic offices for administrative support of research computing systems
- Develop operational support models for hosting research computing assets in RUCS facilities
- Construct technical standards for the research community to follow in communications technologies and administrative practices in system management
- Encourage researchers to use web-based resources

**3. Facilitate achievement of Rutgers community engagement mission**

a) **Promote opportunities for communication and collaboration within and between the institution, its alumni, and the community**

We will construct services to facilitate the timely communication of institutional events, educational opportunities, and research and establish common channels to institutional information from sources throughout the University.

*Specifically, we will:*

- Expand use of electronic lists to decrease paper use for communicating institutional information and events
- Work with Campus Information Services to improve information available on RU Events calendar
- Work with Campus Information Services to update the university's central maps

b) **Partner in the creation of New Jersey's educational infrastructure through development of common technological resources**

Through appropriate partnerships, we will foster interactions with K-12, higher education institutions, and state government organizations.

*Specifically, we will:*

- Work with offices of State and Federal government liaison to examine availability of funding mechanisms for collaborative IT-dependent programs
- Work with appropriate corporate partners and NJEdge.Net to investigate expanding Rutgers Regional Network to other educational and government entities
- Continue leadership role in NJEdge.Net
- Continue support for New Jersey Professional Education Port for the NJ Department of Education, the State of New Jersey, and the US Department of Education

c) **Establish effective relationships beyond the immediate community for promoting the purpose and interests of Rutgers University**

We will work with corporate and government partners to complement institutional goals. We will actively participate in regional and national educational forums, presenting the direction and development of technology at Rutgers.

*Specifically, we will:*

- Continue active participation in Internet2, EDUCAUSE, and CUMREC. Investigate hosting a one-day learning technology symposium for faculty from throughout the state
- Work with offices of State and Federal government liaison to examine availability of funding mechanisms for collaborative IT-dependent programs

- d) **Provide administrative and other computing support for community engagement**  
We will develop services aimed at facilitating community involvement and support those departments and offices providing direct outreach to the greater University community.

*Specifically, we will:*

- Maintain and improve access to online applications such as Admissions applications, financial aid applications, ARTSYS
- Work with Office of Continuous Education and Outreach to enable expansion of distance learning course offerings

#### **4. Facilitate improvement of the quality of university life for members of the Rutgers community**

- a) **Provide effective two-way communication about RUCS, its services, guidelines, and policies**

We will implement a comprehensive communications plan to include methods for the University community to provide feedback to RUCS regarding its operations.

*Specifically, we will:*

- Develop and implement a communication plan to include standardization of information and design on all RUCS websites and for all RUCS publications
- Develop and implement a formal information dissemination program about RUCS services
- Develop and implement formal feedback mechanisms about RUCS services

- b) **Provide tools and approaches for a secure IT environment**

We will develop and implement comprehensive information protection, security, and user identification measures throughout the university. We will advise departments and individuals about and provide tools for securing equipment and protecting information.

*Specifically, we will:*

- Develop a security awareness training program
- Work with identified unit computing specialists and other departmental computing personnel to improve security of departmental computing systems
- Develop standards for use of firewalls at the university
- Expand use of NetIDs and other mechanisms for authentication
- Improve security of central services

- c) **Establish and communicate quality of service standards for RUCS' core and fee-based services**

In consultation with the university community, we will prioritize a set of core services that RUCS will provide, and set quality of service standards for the services. We will establish consistent policies and guidelines for fee-based services and products.

*Specifically, we will:*

- Define RUCS core services and set quality of service expectations for them
- Identify outmoded technologies and processes
- Define, set standards and set standardized fee structures for fee-for-service activities
- Produce appropriate communication vehicles to inform the university community about RUCS services, quality of service expectations, and fee-for-service operations

d) **Provide administrative and other computing support to improve the quality of university life for members of the Rutgers community**

We will provide and support a set of well-defined IT services to facilitate the business processes and everyday activities of members of the university community. We will set university-wide standards for state-of-the-industry IT products and services.

*Specifically, we will:*

- Maintain and enhance web applications such as pay for performance, faculty survey, people database, email, and listserves
- Work with ITCC to set priorities for major system development and administrative initiatives
- Work with business areas to eliminate use of out-of-date technologies and move toward newer technologies
- Provide data for use by such organizations as the Rutgers Foundation, RU Connection, Office of Public Information
- Improve support for computing access from off-campus locations

Ongoing operational strategies will include:

- Building better relationships with stakeholders, strategic partners, and customers
- Educating the university community about Information Technology and how it can be used to assist members of the community in achieving their goals
- Improving the efficient use of human and financial resources and identifying new opportunities for resources
- Promoting employee development and training
- Reviewing progress made in achievement of goals

## **Implementation Strategies – Years 2 and 3**

After evaluation of the accomplishments in Year 1, and based on resource availability and recommendations of the ITCC and other advisory boards, the following are examples of initiatives believed to be important for Fiscal Years 2004 and 2005:

### **1. Facilitate achievement of Rutgers teaching and learning mission**

- Expand Help Desk services
- Increase support for video streaming
- Increase integration of data with standardized courseware
- Maintain RUNet
- Expand access to RUNet for teaching faculty
- Improve software support for students
- Plan for next generation of systems, software, and network
- Expand working relationship with Unit Computing Specialists
- Continue implementation of wireless technologies
- Implement new generation email and calendaring service
- Implement secure technologies and services for instructional support
- Examine next-generation administrative systems

### **2. Facilitate achievement of Rutgers research and discovery mission**

- Expand access to RUNet for research faculty
- Expand research collaboration capabilities of Rutgers Regional Network
- Increase Internet bandwidth to facilitate research needs
- Enhance research collaborations both on- and off-campus through use of videoconferencing technologies
- Expand working relationship with Unit Computing Specialists
- Implement new generation email and calendaring service
- Implement secure technologies and services for research and discovery
- Examine next-generation administrative systems

### **3. Facilitate achievement of Rutgers community engagement mission**

- Evaluate development of applications for use by participants in NJEdge.Net
- Examine expansion of Rutgers Regional Network to Experiment Station field offices
- Expand web-based services
- In collaboration with Alumni offices, enhance electronic communication with alumni
- Implement secure technologies and services for community engagement
- Examine next-generation administrative systems
- Continue support for New Jersey Professional Education Port for the NJ Department of Education, the State of New Jersey, and the US Department of Education

### **4. Facilitate improvement of the quality of university life for members of the Rutgers community**

- Continue development of data warehousing capabilities
- Improve support for computing access from off-campus locations
- Discontinue outmoded technologies and processes
- Expand security awareness program into a train-the-trainer program
- Provide a self-service tool for system vulnerability scanning by departments
- Implement secure technologies and services to improve the quality of university life
- Examine next-generation administrative systems

In addition to those ongoing operational strategies described for Year 1, strategies for Years 2 and 3 will include:

- Developing mechanisms to control IT costs
- Improving the technical competence of IT staff
- Expanding the depth of personal and group leadership within the organization
- Investigating mechanisms for obtaining funding for equipment evergreening
- Investigating hosting a CIO Forum for university CIOs and directors from public AAU institutions
- Reviewing/revising RUCS mission, vision, values, and strategic goals

**[inside back cover]**

**Leadership**

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