

Carnegie Mellon

2008 STRATEGIC PLAN

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Part I: Introduction

Overview

Since it was founded in 1900, Carnegie Mellon has transformed itself several times—from technical school, to institute of technology, and in the last forty years, to one of the world's leading research universities. Yet, amidst all this change, some fundamental qualities have emerged and endure.

We measure excellence by the impact we have on making the world better. Building on deeply grounded disciplinary strength, we collaborate across disciplines, and the initiative to do so comes from the ground up, not the top down. We are nimble and entrepreneurial, moving quickly and prudently when we see an opportunity. We do not do everything, but focus on areas where our comparative advantage makes us among the best in the world. We view teaching and research to be on the same continuum of knowledge creation, so that all students have the chance to develop deep knowledge of their major fields and to grasp how new ideas can change the world. While some of us wonder about deep and timeless questions (*What did the birth of the universe look like? What makes a sonnet work?*), others are driven by practical challenges (*How can computers improve health care? How can urban design promote health and fitness? What is the best way to teach high school math?*). Many of us share a fascination with making things—creating brand new things or making old things better. Sometimes our efforts are driven by a particular need; sometimes we do things just because they are cool and interesting—often it is those ideas which have had impact more far-reaching than we could ever have predicted.

We strive to be a university that values the intellectual engagement, professional excellence, and health and well-being of students, faculty, and staff. We recognize the lifelong connections of our alumni to the university community, and look for ways for those connections to flourish. We are proud that our community benefits from the range and diversity of our experiences, backgrounds, and habits of mind and work. We are also

a university committed to being an innovative contributor and productive partner in the vitality of our regional, national, and global communities.

These characteristics have made Carnegie Mellon a uniquely compelling success story in American higher education over the last fifty years. We are different, and we know it. We are comfortable with the distinctive character of the university and are proud of the ways in which we create positive change in the world.

In such a decentralized and open university, and in an era of great scientific discovery and cultural dynamism, the function of a strategic plan cannot be to offer restrictive prescriptions or strict timelines for progress. Its purpose is rather to identify areas of focus, to prime us to be alert to ways to build on our strengths, and to prepare ourselves to respond swiftly and skillfully to emerging opportunities.

The point of departure for the 2008 plan was the university's strategic plan of 1998. That this new plan reflects the same core pillars of the 1998 plan is a testament to the effectiveness and continued relevance of prior planning efforts. Still, the 2008 plan reflects new thinking about and articulation of what we aspire to, what values we share as a community, what we teach, how we conduct research, and what we bring to our region, our nation, and the world. This plan is an expression of a year-long discussion that was, as is the Carnegie Mellon way, open to everyone in the university through working groups, websites, and public forums.

Each section of this document briefly summarizes many months of thoughtful discussion on the six pillars of the plan. More information on the process is available at www.cmu.edu/strategic-plan.

While each pillar was discussed separately, three common themes emerged, each rooted in the conditions and urgent needs of the world. First, issues of environmental sustainability must play a role in learning, research, and practice. Second, we must continue to respond to globalization, through the organic development of our programs

and partnerships around the world; in our responsibility to our various communities, nations, and regions; and, most of all, in integrating global awareness into the education of our students. Third, we must steward and expand our limited financial resources and facilities, investing in a disciplined way in those areas of strength with the greatest potential for impact on teaching and research.

We believe the 2008 Strategic Plan clearly primes us for another decade of great impact, and prepares our students, faculty, staff, and graduates to be, in Herbert Simon's words, "authors of the future" and drivers and architects of change.

Mark S. Kamlet

Provost and Senior Vice President

Chair of the 2008 Strategic Planning Steering Committee

Jared L. Cohon

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Carnegie Mellon University

Our Vision

Carnegie Mellon will meet the changing needs of society by building on its traditions of innovation, problem solving, and interdisciplinarity.

Our Mission

To create and disseminate knowledge and art through research and creative inquiry, teaching, and learning, and to transfer our intellectual and artistic product to enhance society in meaningful and sustainable ways.

To serve our students by teaching them problem solving, leadership and teamwork skills, and the value of a commitment to quality, ethical behavior, and respect for others.

To achieve these ends by pursuing the advantages of a diverse and relatively small university community, open to the exchange of ideas, where discovery, creativity, and personal and professional development can flourish.

Our Values

Dedication, as exemplified by our commitment to the critical issues of society and our uncompromising work ethic.

Collaboration, as exemplified by our interdisciplinarity, our external partnerships, and our capacity to create new fields of inquiry.

Measuring excellence by impact, as exemplified by our focus on issues critical to regional development, national interest, and global welfare.

Entrepreneurship, as exemplified by openness to new ideas, prudent use of resources, and readiness to act.

Depth driving breadth, as exemplified by our issue-driven research, our context-based general education initiatives, and our focus on problem solving and creative production at all levels.

Compassion, as exemplified by our focus on human welfare, on the betterment of society, and on the personal development of the members of our community.

Integrity and inclusion, as exemplified by our attention to the highest ethical standards in all domains, and our commitment to being a community which welcomes talented minds from diverse backgrounds and challenges them individually and collectively to achieve their best.

Part II: Pillars of the Plan

Pillar 1: Research & Artistic Creation

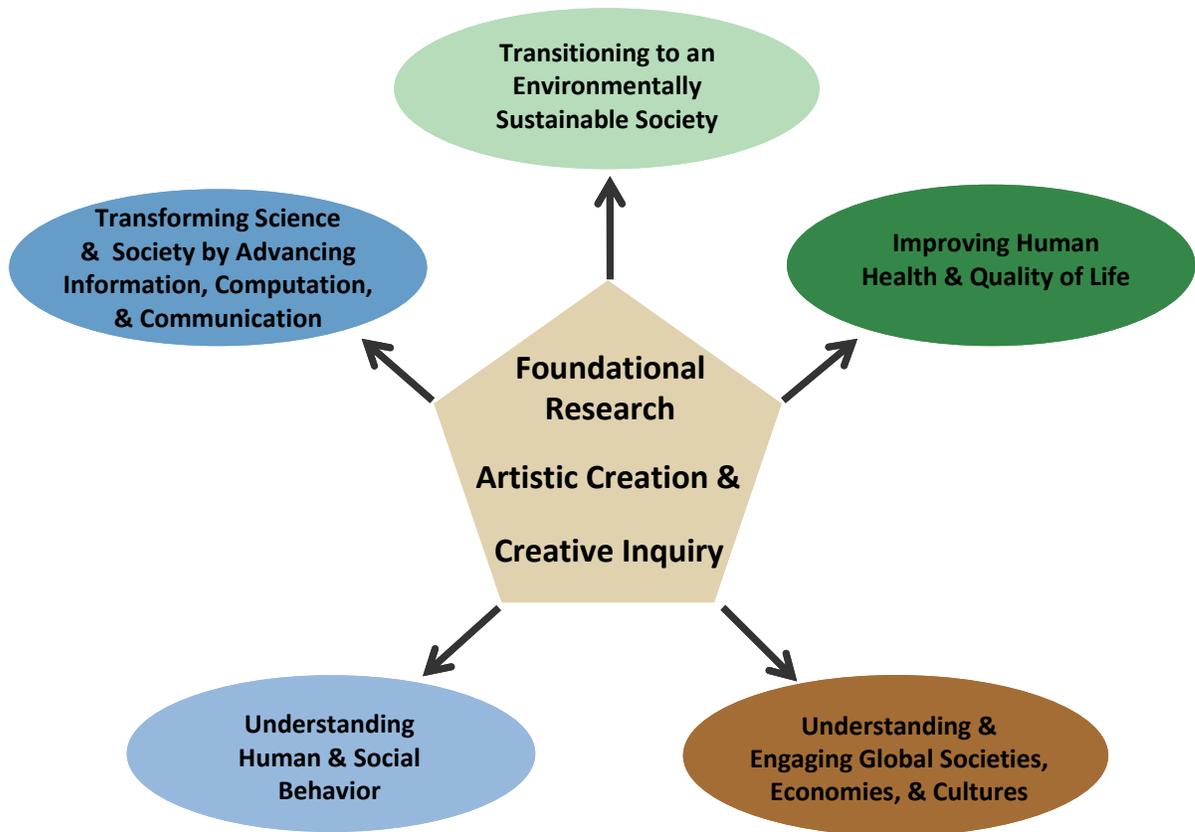
Priorities for research directions at Carnegie Mellon are driven by the emerging ideas, scholarly growth, and scientific discoveries of the faculty. A strategic plan for research in this environment is designed to support this organic development—to create guidelines for faculty hiring and allocation of other resources, to make faculty aware of shared interests and opportunities for collaboration, and to augment the case for support of research to government, industry, private foundations, and individuals.

Figure 1 offers a conceptual model of this activity. At its core is a reaffirmation of the critical role of foundational research in the behavioral and social sciences, the arts and humanities, engineering, in the disciplines of business management and public policy, and in the natural and mathematical sciences. Artistic creation and creative inquiry energize and shape the university in vital ways, contributing to research, self-expression, and generation of new ideas. Interaction between the arts and other disciplines, especially in technology, is a source of mutual strength, novel perspectives, and inspiration. These activities are central to the training of graduate students, whose numbers have intentionally grown over the last decade; innovative research is increasingly integrated into undergraduate education as well.

Research, artistic work, and creative inquiry of many kinds are truly diverse endeavors on this campus, yet five common themes, shown in the outer circles of Figure 1, unite different disciplines and suggest priorities for the coming years. This includes areas relating to *computation*, such as cyber-enabled scientific discovery; large-scale, data-intensive computing; the rich interconnections of the arts and technology; and social applications of computing (including business, policy, and health care applications); *sustainability* issues such as fossil fuel and renewable energy (materials, processes, and policies), climate protection, and the design and infrastructure of buildings, products, and cities; *health and quality of life* topics such as neurobiology, computational biology, mind-body issues, medical robotics, biomedical engineering, and materials science; *social and*

behavioral studies, which include cognitive sciences, behavioral economics, IT-enabled organizations, arts, and humanistic perspectives on culture and society; and *global economic and cultural issues* in the arts, history, languages, finance and economics, organizational behavior, and international politics and governance.

Figure 1



Goal

Through foundational research, artistic creation, and creative inquiry, Carnegie Mellon will make significant contributions to society and enhance human welfare by identifying and solving real-world problems.

Strategies

Foundational research and artistic creation are the central processes through which Carnegie Mellon will have impact in five broad areas of focus:

1. Transitioning to an environmentally sustainable society.
2. Improving health and quality of life.
3. Understanding and engaging global societies, economies, and cultures.
4. Understanding human and social behavior.
5. Transforming science and society by advancing information, computation, and communication.

Pillar 2: Education & Student Life

The distinct strength of Carnegie Mellon's approach to education is the depth and rigor of discipline-specific study, which drives and informs the breadth of its curriculum. Our approach of deep exploration in a field, combined with a problem-solving, real-world relevance, encourages students to collaborate across disciplines, to challenge their own perspectives and ideals, and to learn to value the viewpoints and contributions of others. The faculty have built on this interdisciplinary energy over the past decade, by developing unusual if not unique cross-college degree programs—linking, for example, arts and humanities, science and arts, or, most recently, computer science and arts. This combination of depth in learning and breadth in collaboration fosters the development of critical thinking, curiosity, creativity, personal integrity, social responsibility, and professional ethics.

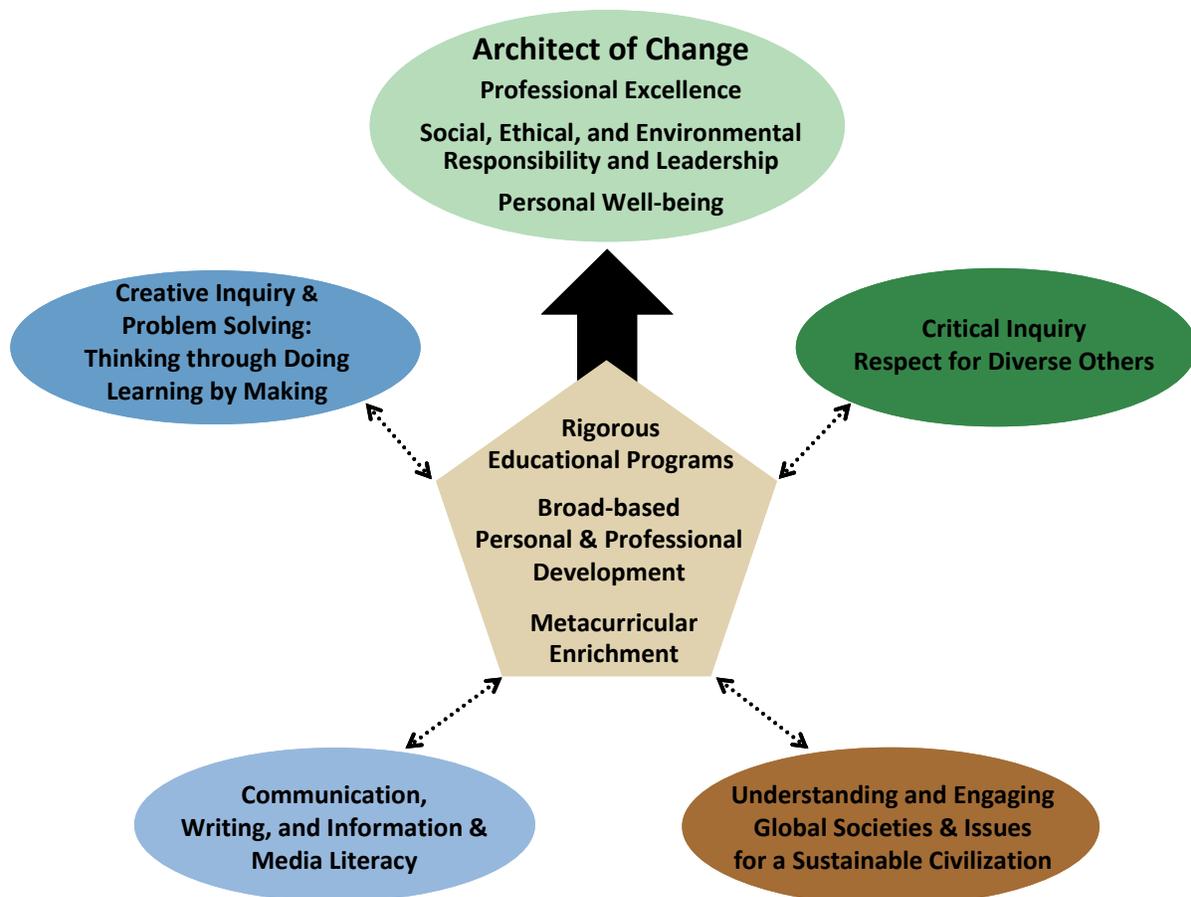
Our faculty model a commitment to these ideals of learning. As researchers themselves, they engage graduate and undergraduate students in the research process. Often this involves the production or making of *things*—sensors or robots, works of art, financial instruments, analytical tools, virtual worlds. It is our aim that all students will find at the core of their learning experience an exhilaration in what is possible at Carnegie Mellon, that they will adopt our openness to innovation and experiment, and that they share our enthusiasm for creating something cool or discovering something new.

The rigor of academic life of the campus is clear, and our students demand much of themselves intellectually, artistically, and professionally. With complementary intensity, students embrace opportunities that occur beyond the classroom. The number of student-led organizations has soared in the past decade, as has student engagement in guiding and contributing to a broadening student experience. This trajectory must be maintained; indeed, it must grow in new and inventive ways.

The talent of our student body will continue to be the cornerstone of a campus community rich with opportunity for active involvement outside the classroom, both socially and in service to others. On that foundation, the university will continue to focus on the student experience as a whole, making life outside of the classroom as rewarding as the core academic experience.

Our vision for education is reflected in Figure 2 below. At the center are three components of a Carnegie Mellon education: rigorous studies in the disciplines, including opportunities for research; metacurricular enrichment; and an emphasis on personal and professional development. All activities support an overall vision of preparing students to be architects of change whose professional excellence, responsibility to others and the environment, and concern for their own health and personal well-being are critical to their success.

Figure 2



Goal

Carnegie Mellon students will contribute to and thrive in the ever-changing global community as socially responsible leaders and architects of change.

Strategies

1. We will build on our longstanding and pervasive focus on professional excellence; social, environmental and ethical responsibility and leadership; and sense of health and personal well-being.
2. We will foster critical inquiry, driving our educational focus and informed by an abiding respect for diverse others, both professionally and personally.
3. We will continue to put creative inquiry and problem solving at the center of the Carnegie Mellon education, heightened by a focus on impact and engagement; thinking through doing and learning by making, as is our heritage.
4. We will enhance the capacity of our students to interact productively with others, consistent with our commitment to teamwork and leadership, specifically through development of communication skills, writing, and information and media literacy.
5. We will actively contribute to students' understanding of and engagement in global societies, and notably of issues critical to a sustainable civilization.

Pillar 3: Regional Impact

Pittsburgh and southwestern Pennsylvania look to Carnegie Mellon University first and foremost to offer excellence in education and scholarly research. Increasingly, our neighbors also look to us to address the challenges of maintaining a strong economy and a high quality of life.

Carnegie Mellon recognizes its interdependence with the region. Our ability to recruit the best faculty, staff, students, and corporate partners is closely tied to the health and attractiveness of the Pittsburgh region. Accordingly, Carnegie Mellon will work to leverage its areas of institutional strength to help the region maintain a vibrant economy and an improving quality of life. It will do so in areas of activity that support or complement the university's core research and education activities.

Carnegie Mellon's 1998 Strategic Plan recognized the university's responsibility to partner with the region, and we will continue our efforts to achieve this vision.

Goal

Carnegie Mellon will contribute significantly to economic growth and improved quality of life in Western Pennsylvania in areas that leverage and complement our core research and educational activities.

Strategies

1. Carnegie Mellon will continue to encourage technology-driven regional economic growth.
2. We will continue to support improvements of K-12 education in the region, through both research and community service.
3. We will enhance the region's quality of life, by working in our areas of strength, such as visual and performing arts, environmental issues, and public policy initiatives.
4. We will pursue those activities in which the region becomes both a laboratory for research and a site for collaborative inquiry and educational innovation.

Pillar 4: Globalization and International Initiatives

The heart and soul of the university is the pursuit of great ideas that can transform the future. In the early 21st century, we recognize that our future will inevitably be characterized by an increasing degree of global integration among individuals, organizations, cultures, and societies. Carnegie Mellon has grasped this reality and responded. We are a truly global university, engaging in research, education, and technology transfer throughout the world. We are as committed to learning from others as we are to imparting our expertise. We are also committed to increasing student awareness of global issues and problems, and the pathways to their resolution. In continuing our global influence, we must:

- Ensure consistent quality for all our programs and activities throughout the world.
- Emphasize the long-term viability of all global programs and activities.
- Act as an ethical and effective global citizen.

Goal

We will strengthen our leadership position and will build new models for global knowledge creation, education, and citizenship.

Strategies

1. Carnegie Mellon will educate students to understand and be effective in the global context of their professional and personal lives.
2. We will build upon our diverse global activities to create new forms of global collaboration and partnerships.
3. We will integrate research more fully with education in our global activities.
4. We will learn systematically from our global experiences and transfer that knowledge effectively throughout and beyond our university community.

Pillar 5: Carnegie Mellon Community Success

Carnegie Mellon's learning and working environment promotes individual and community success, challenging and enabling all community members—faculty, students, alumni, and staff—to maximize their potential in an increasingly complex and interdependent world.

Carnegie Mellon is an open and inclusive community which values integrity, hard work, compassion for one another, and contribution to society. Applying across all Carnegie Mellon locations around the world while maintaining respect for cultural differences, community success grows from adherence to this core value system. We believe that diversity of talents, perspectives, and experiences is essential to continued strength. New ideas and vigorous debate generate new fields of inquiry, stimulate discussion of innovative ideas and standards, and support continuous improvement of professional practices.

Goal

To create a viable, supportive, rewarding, and collaborative environment that enables our faculty, students, alumni, and staff to advance the university's vision and mission.

Strategies

1. Based on a broad understanding of shared goals, we will sustain a climate of collaborative problem solving that invites diverse views, crosses organizational boundaries, and supports professional growth—all to produce outcomes that further the university's growth and aspirations.
2. We will foster mutual responsibility and respect in collegial and managerial interactions and processes.
3. We will promote well-being and work-life balance that support high achievement.

4. We will encourage, support, and recognize individuals and teams that make a positive impact on the university and further its goals.
5. We will strive to increase diversity through recruitment and retention of under-represented minorities and women on our faculty and staff and in our student body, and by increasing the number of under-represented minorities and women in positions of leadership.
6. We will enhance lifelong connections with the university for all members of the community, especially embracing the rich potential for deeper engagement with and by our alumni.

Pillar 6: Finance & Infrastructure

Four separate but interrelated areas of focus are critical to the university's financial welfare and infrastructure; these areas, to some extent, are shaped by and underlie all other elements of the strategic plan:

1. Managing and growing the endowment.
2. Improving business processes.
3. Optimizing use of campus space and resources while developing suitable locations for expansion.
4. Investing in information technology.

As the university's financial base, *the endowment* is critically important to the institution's mission. At present, Carnegie Mellon's endowment remains significantly smaller—both in absolute terms and on a per capita basis—than our peer institutions, resulting in heavy reliance on tuition and research funding for operating income. Growth of the endowment will allow for greater independence in shaping the university's future, operational stability, funding of infrastructure, reducing dependence on tuition, and leveraging strengths for continued excellence.

Carnegie Mellon's growth, both in Pittsburgh and around the world, as well as new external requirements and regulations, have heightened our focus on enhanced *business processes*, organizational accountability, and functional transparency, while protecting against undue bureaucracy. Carnegie Mellon's decentralized environment relies on the skills and knowledge of the administrative professionals in the colleges and departments. The demands on these professionals have changed and increased in recent years, expanding the need for training and collaboration.

The university's growth has also steadily increased the need for *space* over the past decades, and this increased demand is expected to continue. Thus, Carnegie Mellon must optimize the use of campus resources and pursue off-campus opportunities. The university will enact a development strategy for prudent use of existing land and buildings and will renew the university's master plan with this aim in mind. At the same

time, the university will continue and strengthen its leadership in green practices on all campuses.

University competitiveness in the 21st century depends on *information and communication technologies* that serve the goals of research, instruction, and administration. These technologies must be flexible, reliable, manageable, sustainable, and secure. As we modernize information systems, Carnegie Mellon will continue the university's tradition of using its own systems both as a source of data and test beds for faculty research, supported by a core of cost-effective central services that can be leveraged by the results of innovations in information and communication throughout the university.

Goal

Continuing a tradition of extraordinary impact with a relatively modest resource base, the university will build endowment assets, follow best practices in deployment of resources, creatively and effectively develop facilities for optimal and environmentally sustainable use and sustain a high-functioning information technology infrastructure.

Strategies

1. We will continue to focus on growth of endowment, high level risk-adjusted investment return, and spending policies which minimize budget volatility and maximize the preservation of purchasing power.
2. We will continue to implement measures for efficient management of revenue, expense, capital assets and human resources, consistent with our long-term financial viability.
3. We will pursue optimal development and use of existing facilities and strategic expansion off-campus.

4. We will continue to lead in emphasizing environmentally sustainable practices in campus operations and processes.
5. We will invest in cost-effective information technology systems, including those that support technology enhanced learning and facilitate integration of research and practice.