Research University in the 21st Century

A. Extra-institutional
   1. Technological landscape
      a. Advancements
         a. Hardware
            i. Processor speeds
            ii. Storage capacity
            iii. Screen displays
            iv. Portability
            v. Supercomputers
            vi. Robotics
            vii. Adaptive technologies
         b. Software
            i. Databases/data processing
            ii. Graphical user interfaces
            iii. Agents
            iv. Theorem-proving software
         c. Telecommunication networks
            i. Wireless technology
            ii. Fiber optics
            iii. “Global communications skin”
               1. Advanced, distributed infrastructures
               2. Multimedia networks
         b. Applications
            a. Learning & research technologies
            b. Virtual/simulated environments
               i. Electronic conferencing
                  1. Telepresence
               ii. Collaboratories
               iii. Virtual Reality (VR)
         c. Cyberinfrastructure initiative

B. Inter-institutional
   1. Industry
      a. Economic forces
         i. Knowledge driven economy
            a. Increased value of intellectual capital
               i. Knowledge work/knowledge workers
         j. Highly competitive educational marketplace
            a. Business/university partnerships
            b. For-profit educational providers
            c. Not-for-profit educational providers
      k. Ecommerce
         a. B2B commerce
   2. Government
      a. Government/university partnerships
      b. Egovernment

C. Intra-institutional
   1. Core Functions
      a. Teaching
         i. New forms of pedagogy
            1. Lerner-centered
a. Tailored
   i. Control of learning environment
   ii. Lifetime skills
b. Democratizing influence of technology
2. Instructional innovations
   a. Content development
   b. Courseware development
   c. Assessment tools
   d. Student guidance
3. New forms of delivery
   a. Technological augmentation of traditional classroom
   b. Distance education
      i. Online courses
      ii. Course management tools
   c. Outsourced services
4. New learning environments
b. Research
   i. Increased computing power
      1. Advances in complex data analysis
   ii. Increased information access
      1. Digital libraries
         a. Preservation and access to original source material
   iii. Interdisciplinary cooperation
      1. Collaboration/teamwork
      2. Digital devices as primary interface with other people
   iv. Commercialization of intellectual assets
   v. Decoupling of research and education
   vi. Prospects of future funding
c. Service & Outreach
   i. Role of higher education in society
      1. Preservation of important values of university
      2. Generation of new knowledge
      3. Constructive social criticism
      4. Knowledge-based services
         a. Technology transfer
         b. Health care
   ii. Fading boundaries between university and society
      1. Extension of reach to traditionally underserved
   iii. Economic development
      1. Regional
      2. National
2. Institutional Identity
   a. Organization
      i. Mission
         1. Preservation of traditional values
            a. Academic freedom
            b. Rational spirit of inquiry
            c. Liberal learning
   ii. Personnel
      1. Unbundling of faculty & students from university
         a. Faculty
            i. Faculty entrepreneurship
               1. Content ownership
                  a. Mindshare/learningware
               2. Free agency
               3. Risks to tenure
            ii. Loss of traditional power
               1. New student-faculty relationship
         b. Students
i. Consumers of educational services
   1. Increasingly diverse
   2. Mobile
   3. Lifetime participants

iii. Disciplines
   1. Breakdown of disciplinary boundaries

b. Structure
   i. Erosion of constraints
      1. Temporal
         a. On-demand, anytime, anyplace academic schedule
      2. Physical
         a. Residential campuses
         b. Virtual campuses

c. Management
   i. Mergers/Acquisitions
      1. Alliances
         a. Convergence with knowledge-intensive companies
   ii. Competition
      1. For-profit educational companies
   iii. Role as Services Broker
   iv. Role as Services Supplier

d. Financing
   i. Need for new financial model
      1. Exploitation of markets for educational services
         a. “Global knowledge and learning industry”
      2. Resource management
         a. Human infrastructure
            i. Internal IT expertise
         b. Technology infrastructure
            i. Capital expenditure