Sam (Palmisano) has just described the nature of innovation and explained why it is essential that we meet the challenges and rise to the opportunities involved in creating an innovation economy. I would like to highlight the recommendations that have emerged from the National Innovation Initiative that we believe are needed to create that innovation economy.

Sam made two points that are important to bear in mind as we consider the recommendations. First, innovation is not a linear process. It emerges from a complex ecosystem of relationships and interactions. As a result, there is no “master stroke” or pre-eminent recommendation that will accomplish everything that is needed. There is no one entity that can provide all the answers, but rather many players who hold different pieces of the puzzle. And there is no single challenge to meet, but more often a variety of small obstacles. But when we add them together, the cumulative impact can keep good ideas from coming to fruition.

The second point comes from Sam’s eloquent description of how the innovation process is changing. The recommendations we put before you this morning reflect the fact that a number of things we used to think of as “either-or” opposites actually can be undertaken simultaneously in a constructive balance with each other. For example, we need to have both competition and collaboration and hold them in a constructive balance. The same is true for nationalism and globalization, and for security and openness. And we need to provide for the protection of intellectual property while at the same time encouraging the sharing of knowledge.

These complexities and relationships are reflected in the presentation of the recommendations in the report that you have received. The recommendations originated in the endeavors of seven working groups who have given an incredible amount of time to their development during the past nine months. The recommendations were further shaped by our outstanding Advisory Committee, headed by Bill Brody and Norm Augustine, and subsequently were vetted by the Principles Committee. All of these groups deserve credit for the final outcomes. As one who was privileged to participate in these efforts I can assure you every issue was debated and critiqued in a process that was stimulating and invigorating.

However, you will quickly see that the report does not present lists of recommendations lined up against our working groups. Instead, we have gathered the recommendations under the headings of three broad topics.

The first is talent, which is the human dimension of innovation and addresses the question of how we help Americans prepare to participate and thrive in an innovation economy.

The second is investment, which represents the financial dimension of innovation and ranges from investment in research, to support for risk-taking and entrepreneurship, to encouragement for longer-term innovation strategies.
And the third is **infrastructure**, which address the creation of a favorable environment for innovation, not only in terms of physical infrastructure, but also policy tools in areas such as intellectual property.

Within these three topics, we have identified ten goals that America should aspire to, and each goal has several recommendations focused on what is needed to realize it. In all we have 30 recommendations. I don’t have time to describe them all, so I am going to attempt a conceptual overview and our colleagues on the panels will lay out further background for you. We would also encourage you to read the report for additional insights.

The innovation process begins with curiosity-driven research, then moves through the development of applications that are commercialized, creating new businesses and new jobs. To fuel that process, one of the most important things we have to do is replenish the talent pipeline of scientists and engineers who can discover the new ideas and invent the new technology that form the raw materials of innovation. So the very first topic for our recommendations is **talent**.

It is critical that the generations who follow us and lead the nation through the coming century understand how innovation works. Achieving this goal requires that we retool our curricula all the way from K-12 classrooms through undergraduate to graduate education. But even more importantly, it requires that we create an innovation culture and mindset in our educational institutions at all levels. By that I mean providing opportunities for students to ask questions out of curiosity, and then explore and conduct research to find answers… opportunities for students to learn how to solve open-ended problems, to engage in teamwork exercises, and to appreciate and experience the processes involved in commercialization. These are not skills that you necessarily get from listening to a lecture, or reading a book, or memorizing a formula, but rather they are often learned through experience. So we need to create an educational environment that provides the exposure to innovation for our students.

In addition to growing new generations of innovators, we must also empower the workforce of today. Those of us in this room can appreciate that innovation creates new, high wage jobs – for example, it is estimated that the 42 industries represented by the Council alone will create 100 million new jobs worldwide in the next decade. But to many workers, the economic ground often feels like it is shifting under their feet, and many of them are uncertain about their future. Our goal is to empower them to succeed in this challenging global economy by expanding career-long opportunities for education and training. We also need to recognize the growing fluidity of employment, as workers increasingly move among multiple jobs and even careers. Such changes call for us to develop new ways of thinking about portability of benefits like health insurance and pension plans.

The second topic in our recommendations is **investment**. Today the world enjoys the benefits of a wide range of innovative technologies from the Internet to magnetic resonance imaging that emerged as applications from fundamental research begun decades before. And it is critical to keep the fundamental research going that stokes the innovation process. It is difficult for industry to invest in fundamental research, because it often takes time before the commercial applications of a new discovery become clear. As a result, it is important for the federal government to maintain its role as the funder of first resort of long term research.
We also point out that the most dynamic areas for the generation of new ideas and new technology are multidisciplinary – biotechnology and nanotechnology are just two examples. Groups such as the President’s Council of Advisors on Science and Technology have called for a balanced approach to the federal research portfolio to enable a broad range of science and engineering disciplines to move forward together.

Investment is critical to energize the entrepreneurial sector of our economy, expanding our ability to put to use the knowledge and technology our research produces. A few years ago, the Council on Competitiveness undertook a “Clusters of Innovation Initiative” in which we studied regional economies. What we learned was that innovation is generated at the regional level in places where all the critical components needed to produce and commercialize knowledge are interacting with each other. And we believe we should give attention to creating “hot spots” of innovation across the country that will ultimately drive the national economy forward.

Our investment recommendations also call for a shift in America’s investment mindset as well as new measures to place increased value on investment in intellectual capital and provide rewards for long-term growth strategies. After the stock market took a nosedive in 2001, our investment horizons seemed to shrink to quarterly performance reports and narrow to avoid risk. But that mindset will stifle innovation. We need to broaden our investment horizons again to become more accommodating of risk and to recognize the longer-term value of knowledge and ideas.

The third topic of our report is infrastructure, with the goal of creating an environment that is conducive to innovation. The first things that usually come to mind when someone says “infrastructure” are transportation and energy systems, and I think all of us recognize that they need improvement. In addition, we need more powerful national IT networks that have the capacity to handle the explosion of new users and new technology.

But there is a second realm of intangible infrastructure that also must be reconfigured to serve the innovation economy. It is essential that we reshape our public policy framework, especially those policies governing intellectual property, so that they support and encourage innovation. Here is where many of those critical balances of seeming opposites that I mentioned earlier come into play, so that we are able to protect intellectual property even as we promote the sharing of knowledge, and can collaborate with other nations even as we also compete with them.

This has been a very broad-brush overview of the recommendations, and the upcoming panels will provide an opportunity to discuss them more fully. The panel entitled “Thriving in a World of Challenge and Change,” which will begin momentarily, will focus more fully on the recommendations. “Imagining America’s Future,” which comes after a short break for refreshments, will envision an economy based on innovation. The third panel, “Mobilizing for Success in the 21st Century,” will discuss how we realize that vision. And then we will conclude with a call to action.