

Testimony of Craig R. Barrett
Chairman of the Board, Intel Corporation
Senate Commerce Committee
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Mr. Chairman, members of the Committee:

A once-in-a-lifetime event has taken place over the last 15 years. Half of the world's population has joined the free economic system. Approximately 3 billion people from China, India, Russia and the Eastern European countries have entered the world marketplace. They represent a tremendous opportunity for U.S. companies. They are the consumers of today and tomorrow -- who are ready, willing and often increasingly able to purchase products "Made in the U.S.A." Three-quarters of Intel's sales, for example, are now outside the United States, and the Asia-Pacific region accounted for 40% of our revenue in 2003. But these nations also present an enormous challenge to U.S. economic and technological leadership.

Aside from the growing competency and success of the foreign companies U.S. corporations must compete against, governments around the world are fighting to make their nations the best place to do business. They are developing their infrastructures, offering incentives to attract investment, and in many cases, providing a highly educated and motivated workforce. They are investing in research and creating their own domestic industries. As a result, we no longer have a lock on the ideas and innovations of the future.

This was the challenge posed to the panel, upon which I served, convened by the National Academy of Sciences/National Academy of Engineering: What do we, as a country, need to do to prepare for this changing global dynamic? The report we issued, "Rising Above The Gathering Storm", tackles these questions.

The Policy Prescription

To retain or create jobs here in the US, we (as a society) first have to *choose to compete*. We won't win the race by asking others to slow down or by throwing barriers in their paths. Rather, we will win by being better than the competition. That means we must have higher productivity, greater innovation, superior education, and cooperative government policy. Here are four key points to remember:

First, the competitiveness of the U.S. workforce depends on a strong educational foundation, particularly in the math and science skills required to succeed in the information technology industry. Yet, U.S. secondary school students continue to score significantly below the international average in both general and advanced math and science. In fact, out of developed countries, the U.S. ranked 19th in math achievement and 18th in science achievement. And this trend continues into the U.S. university environment where we see declining interest and number of graduates in engineering and the physical sciences. The fact that approximately

one-half of advanced engineering degrees granted in the U.S. go to foreign nationals further exacerbates this issue.

Fixing this problem requires a long-term commitment to some basic principles. We need to assure that teachers are well-prepared, academically, to instruct in math and science. We need to give them ongoing training opportunities to improve their skills. We need to pay market-competitive salaries to attract and retain good math and science teachers. We need our school administrators to open the doors to people who want to serve in teaching as a “second career” and who are qualified to do so – with a minimum of bureaucratic hassle. Most importantly, we need to raise our sights and not tolerate the mediocrity we currently have.

Second, we must invest in the technologies and industries of the 21st century. This means our government should prioritize where it puts its limited resources – will we subsidize the industries of the past, or invest in those of the future? Innovation is the backbone of new technologies, new industries and new jobs. It drives business process improvements, increases productivity, boosts economic development, and improves our standard of living. Yet, the federal commitment to basic R&D is at its lowest level in percentage terms since the National Science Foundation began compiling data in 1953.

In 2000, the federal government sponsored 26% of all R&D, compared to 47% in 1981 and 50% of basic research, down from 71% in 1981. Some would say, “what’s the problem? The private sector should pick up the difference.” But the numbers don’t tell the whole story: most of the federal share of this research today is in the life sciences, while funding for the physical sciences has been flat for over two decades in real dollar terms. And most research done by the private sector is not basic, but developmental and applied research. Private sector companies with obligations to shareholders cannot afford to devote a great percentage of resources to basic research, which “stretches the frontiers of knowledge”. Only the federal government can support such research on the scale needed to support the graduate programs in areas such as engineering, physics, chemistry, materials science, computing technology and mathematics. A goal for the U.S. over the next few years should be to grow the budgets of key public research agencies like NSF by 10-12% a year. This funding goes primarily to America’s universities, which are the best in the world, and we need to maintain their preeminence.

Third, the U.S. must develop the infrastructure to support the industries and advancements upon which much of our economic growth will rely. In a recent survey by the International Telecommunications Union, the U.S. ranked 16th of 20 countries in broadband Internet penetration. Similarly, cellular mobile subscribers made up 54% of the U.S. population in 2003, compared with 106% in Hong Kong, 84% in the United Kingdom and 69% in South Korea.

Our government should adopt telecom policies that encourage broadband deployment and facilities-based competition and, at the same time, assure consumers full access to Internet content and use of related applications and devices. Also, the radio spectrum needs substantial reform. Recently, the Technology CEO Council — the information technology industry’s public policy advocacy organization comprising CEOs from Applied Materials, Dell, EMC, Hewlett-Packard, IBM, Intel, Motorola, NCR and Unisys — made 10 specific recommendations that would maximize our nation’s spectrum efficiency and wireless potential. Simply put, we need to give licensees more flexibility and allow more unlicensed use where appropriate.

Fourth, apply the Hippocratic oath: “Do No Harm”. We are hurting ourselves in three key areas: tax policy, immigration policy, and the intellectual property system.

Tax: Our tax policies today discourage investment in research, and investment in new manufacturing, in the U.S. Two examples:

- The erratic nature of how Congress has handled the Research and Development Tax Credit (one-year extensions, allowing it to expire) – which does not give any secure basis upon which companies can know what the tax treatment of such expenditures will be over time.
- The relatively high degree of taxation of U.S. corporate revenues in the U.S., compared to the tax concessions that foreign governments – eager to secure foreign investment dollars – are willing to give to bring those investments to their shores. Businesses have to make rational economic judgments. We can pursue our existing tax policies, but we must face up to the fact that the rest of the world is out to win investment in new facilities. Our global competitors have no compunctions about taking investment away from the U.S.

Intel continues to invest substantially in new and upgraded manufacturing facilities in the U.S. But building a fabricating plant in the U.S. vs. overseas means starting out with a billion dollar deficit in return on that investment in the U.S. – and most of that delta is due to our domestic tax policies.

Immigration: Our policies are a shambles. While illegal immigration rightly concerns all Americans, and the threat of terrorists crossing our borders must be dealt with, we also have to remember that our graduate schools of engineering are heavily dependent upon foreign talent. We must continue to attract the most talented students from other countries – and keep them here after they graduate, to work and build new companies and industries in the U.S. Yet our visa policies today work against these goals: H1B visas are limited in number compared to our needs, and the backlog for those seeking permanent resident alien status is becoming a huge obstacle to keeping foreign graduates in the U.S. – particularly when there are superb opportunities for those graduates in their home countries as well. These problems must be fixed or our graduate engineering programs in the U.S. will be in jeopardy, as well as industry’s ability to find enough talent in the U.S. to support expansion of research, engineering, and manufacturing capabilities.

Intellectual Property: The patent system is in disrepair. We need a 21st century system: more and better paid examiners; better search tools including expanded databases in computing technologies, semiconductors, and software; and we need to “get back to basics” with regard to how the courts handle patent infringement lawsuits.

The point of the patent system is to encourage innovation and the use, for the benefit of society, of those innovations. Today, the system is beset by “patent speculators”, parties who buy up patent claims in the secondary market for the purpose of pursuing often specious claims of infringement. The hope is to use existing judicial rules on remedies and damages to extract large settlements. We need to rebalance the laws to return to the fundamental premise: the patent system exists for the benefit of society at large, and should not simply become a tool for the game of “legal jeopardy”.

“Gathering Storm” addresses these concerns with specific recommendations.

New Directions:

American Competitiveness Initiative, PACE, and the National Innovation Act

In our industry we have a belief that you cannot save your way out of a recession ... you can only invest your way to prosperity. I believe this holds true for the U.S. as a whole. We have to decide whether we are willing to make that investment.

In his State of the Union speech this past January, and in the FY '07 budget transmitted to Congress in February, President Bush set forth a program – the **American Competitiveness Initiative** – which is designed to begin attacking these problems. The President's program embraces a wide-ranging plan to strengthen our workforce, our math and science education programs, research funding, and investment incentives.

Congress has also embraced this challenge with legislation such as the **National Innovation Act** and the three **PACE bills** introduced last month. Those of us in industry who have been working on these issues for several years now are encouraged by this new national focus on competitiveness. The President's initiative, and the bills that have been introduced, represent the directions that we must move in as a society if we expect to retain our place as the global leader in innovation, the creation of new technologies, and new industries which provide high-value jobs. The business community is united in supporting rapid action on these initiatives.

Our challenge over time will be to ensure that the focus is not lost as the process goes forward, and this year's budget and appropriations are history. Reversing the path of stagnation and decline will require a dedicated commitment in Congress to continuous improvement in programs and funding levels over the next several years. We in industry stand ready to work with you to make long-term success a reality ; to educate and help lead a rebuilding of the foundations of innovation that have served us so well over the past 50 years.

Thank you for your attention.