

The Impact of the National Nanotechnology Initiative: Remarks

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- Good morning, everyone.
- Thank you for allowing me to join you in celebrating the 20th Anniversary of the 21st Century Nanotechnology Research and Development Act and to say a few words about the beginnings of the National Nanotechnology Initiative.
- I’m disappointed I couldn’t be there in person – aging has its constraints. As I look back over two decades, working on the NNI stands out as one of the most rewarding experiences I had as President Clinton’s Science Advisor.
- In 1998, just before President Clinton moved me over from NSF to the White House, at the end of what I think was my last NSF Congressional Hearing, a member asked the final question, something like “where did I think the future breakthroughs would come from.”
- I had no prepared answer, but my response was “nanoscience and engineering.”
- Of course, I had no real idea, at the time, how science and engineering might evolve and what breakthroughs might lie ahead.
- Now, over 20 years later, I am amazed at the scientific advances that have been made and the impact those advances have had on other technologies, markets, and jobs.
- Recently, a study of just the small and medium-sized nanotechnology companies estimated an economic impact of close to \$1 trillion since the birth of NNI. That doesn’t include the Fortune 500 and other multisector companies, which also benefit from nanotechnology.
- But even with this record of accomplishment, if I were asked the same question today, that I was asked in 1998, I think my answer would be pretty much the same. There is still so much potential and research that needs to be done.
- In the latter years of the Clinton Administration, when I was in the White House, there were a number of significant events that led to the NNI:
 - The first step was to officially raise the profile of nanotechnology by elevating the interagency working group on nanotechnology, which was preparing an NNI proposal, to the President’s National Science and Technology Council.

- I was enthusiastic about the proposal, as was Tom Kalil, who handled technology for the president's National Economic Council, and influential in the West Wing.
 - Next, I took the proposal to the president's S&T advisory council PCAST, which turned to then President of MIT, **Chuck Vest**, to review the proposal. PCAST then recommended that President Clinton fund the NNI.
 - And the president agreed, including nearly \$500million in his FY2001 budget request.
 - I had the pleasure of traveling with the president when he gave his speech at Caltech on Jan. 21, 2000, announcing his 21st Century Research Fund, which included the NNI. It was one of my trips on Air Force 1 – a very nice way to travel.
 - Clinton was hosted by Caltech president **David Baltimore** and Board chair, **Gordon Moore**. They presented him with a set of golf clubs made using nanostructured amorphous alloys. He played a few rounds back in Washington, then returned them – government ethics laws – with some comments on how much he had enjoyed the clubs.
 - The president made NNI a priority in the budget discussions with Congress, which ended up appropriating \$464million for FY2001. The NNI was born.
 - In 2002, **Senator Ron Wyden**, then chairman of the Senate Subcommittee on Science, Technology and Space held a key Congressional hearing on nanotechnology, which led to the 21st Century Nanotechnology R&D Act, passed by Congress and signed by **President George W. Bush** in 2003.
- In closing, I would like to add just a couple more personal comments.
 - Before joining NSF, I was on the Rice University physics faculty, so I had many chances to talk with colleagues **Rick Smalley and Bob Curl** about nanotechnology, especially carbon-based materials.
 - Then in my time at NSF, I learned about the nano-scale research NSF and other agencies were funding from **Mike Roco**, who saw the potential of a revolutionary new technology a long time ago. Mike was instrumental in pulling together other agencies to support interagency cooperation resulting in the NNI, and he has been a champion of the NNI from the beginning.
 - When I moved over to the White House, I found that **President Clinton was interested in science and technology** – and he was scary smart. He had no trouble seeing the potential of nanotechnology. But he liked to joke – in one budget meeting I recall – saying “***It's my tiny little initiative.***” Of course, he knew this “tiny initiative” would require about \$500 million to get started.

- I've been enormously pleased with the success of NNI and proud to have had a small role in its birth.
- The NNI is a proven model of what our federal research agencies can do when they work together to support national goals.
- It's a demonstration of how that can be done.
- The NNI is also a success story that needs to be told; and, in my view, the initiative should remain a top priority.
- I'll end by congratulating all of you and the many scientists, engineers, laboratories, federal agencies, companies that have given us so much to celebrate today.
- Thank you and have a great day.



Neal Lane: Dr. Lane is the senior fellow in science and technology policy at the Baker Institute, and Professor of Physics and Astronomy Emeritus at Rice University. From 1998-2001, Dr. Lane served in the federal government as Assistant to the President for Science and Technology and Director of the White House Office of Science and Technology Policy (OSTP). During this time, Dr. Lane submitted to President Bill Clinton PCAST's strong endorsement of the National Nanotechnology Initiative (NNI), paving the way for its eventual adoption into law during the Bush administration. Previously, Dr. Lane served as director of the National Science Foundation (NSF). He has received the National Academy of Sciences Public Welfare Medal, the American Institute of Physics K.T. Compton Medal, and in 2013, the National Science Board presented Lane with the Vannevar Bush Award, which recognizes exceptional, lifelong leaders who have made substantial contributions to the nation through public service activities in science, technology and policy. <https://profiles.rice.edu/faculty/neal-f-lane>