ANNOUNCER: Ladies and gentlemen, please welcome MIT President, Susan Hockfield.

HOCKFIELD: Good afternoon everyone, and welcome to MIT's Compton Lectures. I'm delighted that all of you have joined us today. And, as our custom, we will look forward to a question and answer session after the speaker has finished her prepared remarks.

I want to begin with a little bit of context. The Compton Lectures were established more than 50 years ago in 1957 to honor the wide ranging intelligence of MIT's President Karl Taylor Compton, who had died three years before these lectures were established. Karl Taylor Compton guided MIT for almost a quarter of a century from 1930 until his death in 1954. First as president from 1930 until 1949, and then as chairman of the MIT Corporation, our board of trustees.

As we look at the history of MIT, Compton was absolutely a transformative figure. He led MIT through the difficult years of financial depression and a World War, and guided MIT's emergence as a world leader in engineering and science. In literally countless ways President Compton set the stage for the research, education, and innovation breakthroughs that have poured forth from MIT ever since.

Compton himself was noted for the scope of his understanding, for his integrity, and for his commitment to public service. So it's extremely fitting that we should honor his legacy with a speaker who embodies these same qualities, US secretary of Homeland Security, Janet Napolitano.

Before joining President Obama's cabinet in January of 2009, Secretary Napolitano served for six years as governor of Arizona, becoming a national leader on Homeland Security, border security, and immigration. In 2005, *Time* magazine named her one of the top five governors in the United States. Born in New York City, Janet Napolitano grew up in Pennsylvania and New Mexico. She became the first female valedictorian at Santa Clara University and was awarded a Truman scholarship.

After earning a law degree from the University of Virginia, she clerked on the US court of Appeals for the Ninth Circuit, practiced law in Phoenix, and began her career in public service as US Attorney for the District of Arizona. In the course of her career Secretary Napolitano has broken many barriers, including being the first woman to chair the National Governor's Association, and the first woman to serve as Attorney General of Arizona. Today she becomes the first woman to deliver a Compton Lecture at MIT, believe it or not.

In just over two years as head of Homeland Security, Secretary Napolitano has managed an array of issues from the ongoing threat of global terrorism to escalating tensions over border security to last years oil disaster in the Gulf of Mexico. To address such challenges, Secretary Napolitano is strengthening her young department by seeking out and deploying leading edge science and technology.

In fact, she was here on our campus last spring to talk with local university presidents about higher education and how it can support the mission of Homeland Security. Of course we all want Homeland Security to be safe, and strong, and effective. Yet, as academics, we also have a profound interest in the open flow of information, ideas, and talent. So it behooves us to develop ways for Homeland Security to be effective without being burdensome, restrictive, or unjust.

Today Secretary Napolitano will explore the challenges and opportunities of Homeland Security as an emerging field in technological R&D. And with a shared concern for a secure and peaceful future, please join me in offering a very warm welcome to US Secretary of Homeland Security, Janet Napolitano.

[APPLAUSE]

NAPOLITANO: All right, thank you. Thank you, President Hockfield, for that introduction. Thank you all for your welcome, and thank you to MIT for having me on campus this afternoon. I have to say it is a tremendous honor to be asked to deliver the Compton Lecture, and also to be the first woman speaker in the history of this lecture series.

I know that I am following in the footsteps of some great scientific minds. The first Compton Lecture was actually delivered by Niels Bohr, to whom we owe much of our understanding, of course, of the structure of the atom. In 1978 the lecture was delivered by one of Bohr's students, Linus Pauling, who charted advances of a similar scale when it came to chemical bonding and the nature of molecules. And two years ago my cabinet colleague, Energy Secretary Steven Chu, a brilliant experimental physicist, delivered the Compton Lecture.

So you might say I am the odd one out, I do not have a Nobel Prize. And although I myself am not a scientist I do come from a family of scientists. My father actually is a PhD in anatomy who worked throughout my childhood as a researcher and educator and served for many years as the dean of the medical school at the University of New Mexico. My mother's degree was in zoology.

Some of my most vivid childhood memories have to do with my dad's life as a scientist, because on Saturday mornings he would take my brother and I down to the medical school, which was surrounded by a big, flat mesa in New Mexico, and while he was inside checking on his experiments he would send us out to chase blue-tailed lizards.

Now blue-tailed lizards-- I don't know how many of you all are from the west, or the southwest-- but if you are, you know that blue-tailed lizards have detachable tails. So he would pay us a nickel a tail, for lizards, and this was really big money for me at the time. I think, here at the Sloan School, you could say he was probably monetizing lizard tails for his children.

And my brother went on and actually got his bachelor's and master's degrees right here at MIT, and is now a PhD in his own right working at Sandia Livermore. And my younger sister has a master's in audiology and she has worked with children who use cochlear implants, among other things. But I fell off the science and technology truck and I became a lawyer. You can clap now, that's good.

[LAUGHTER]

So you may be wondering, am I the black sheep of my family. And I think the answer, actually, is no. My family and I share at least two things that bind all of our interests, and I think they are things that would ring true for many of you here today. The first is the love for a good challenge. It's probably safe to say that you would not be here at MIT unless you relish tackling the kinds of problems that stump everybody else.

And the second is seeing one's work as a way to be part of something larger than oneself. To use one's knowledge to confront the challenges of our day and hopefully to make us all better off. So the title for this lecture is "The Future of Science as a Public Service." And it's actually a theme that has been with us for a long time. In remarks at MIT in 1949, Winston Churchill recognized the importance of moving science from the abstract to the concrete. Declaring that science must be the servant and not the master of man.

And, in fact, right around that time we saw an interesting example of man in political office seeking to put science to work for the public good right here. Right here at MIT, because in preparing for this lecture I was shown a copy of a letter from 1948, just a year before Churchill's visit. It was from the mayor of Boston to Karl Compton, who was MIT's president. He wanted to see-- the mayor wanted to see if there were a competent group of engineers who could help address the problem of accumulating snowfall in Boston. And he wondered if MIT could help melt the snow, quote "whether it be by the use of flame throwers, or chemicals, or otherwise."

Now I don't know how MIT responded to that particular offer. I will say I have seen accumulating snow in Boston over the past several years. But I can say that at the HS we are not looking for flame throwers, we are looking for imaginative solutions to really, really tough problems.

Now the founders of this institution understood this well, because they created MIT to address the challenges that our nation was facing in a world undergoing rapid change at that time from industrialization. And that commitment to service to solving the world's problems has only grown. I was astonished to learn, for example, that the Energy Club here at MIT has 2,800 members.

Now we must acknowledge here that the challenges we confront constantly change. They do not remain static. And therefore, our public policies must be sufficiently agile to understand these changes and to adapt as well. And those who implement these policies, our public servants, must also be agile.

This is all the more true in the areas of homeland and national security. Here, the threats of the network world, as well as the opportunities, emerge and evolve faster than one can ever imagine. Now the work of this department, the newest department in the federal government, is rooted in several fundamental shifts we have witnessed over the past few decades.

For example, the United States is no longer isolated by two oceans. Our major belligerents are not necessarily the militaries of other nations. And a technological revolution has made societies more interconnected than anyone thought possible even a few years ago.

So the reality of national security today is that small groups of people can use ordinary technologies to injure or kill, to despoil the environment, or to strike our economy and our society as a whole by attacking our critical infrastructure and also our security and well being. There's also the possibility that small groups of people can use more advanced technologies to do even more permanent damage using biological, chemical, and nuclear or radiological weapons. These small groups of adversaries take many forms.

Some are al-Qaeda-style terrorists, or those inspired by their propaganda. Some follow other violent ideologies. Some extremists are homegrown, their radicalization often accelerated by what they read and watch online. Truth be told, at DHS we must take care not to focus on any single group or any country, religion, or ethnicity. There is no one definitive profile of a terrorist.

Indeed, the creation of our department, DHS, was a response to these new generation challenges. Challenges that were made painfully clear on 9/11. When Congress combined 22 agencies and departments to create DHS just eight years ago, it was the largest reorganization of the federal government since the Department of Defense was created in 1947.

The belief was this, that you could only tackle a problem as complex as securing the homeland if you brought together the different kinds of expertise and multiple resources that exist across the government. In one sense, it's similar to-- I think it's pronounced "mighty,"-- the Major Energy Initiative here on this campus, where you have all of your disciplines working on a large and complicated issue together. And while we at DHS have made some considerable progress, we have a ways to go to thoroughly integrate our functions and our capabilities.

So perhaps some of you here would like some of the challenges that confront us on a daily basis, because at our department at DHS we are constantly asking and trying to answer some very important questions. How do we keep travel and trade flowing across borders, while at the same time enhancing security. How do we secure our nation's critical infrastructure when the vast majority of it is in private hands. How do we meet these goals while being good stewards of our public trust and support. How do we ensure our nation's response and recovery capabilities, what we refer to as our nation's resilience. How do we do our job of providing security without violating civil rights and liberties. And what about the proverbial needle in the haystack, how do we address the risk of potentially catastrophic events-- a major earthquake, a major attack-- when we do not know where, or when it could happen, or what exactly it would look like.

Now the answers to many of these questions involve harnessing science and technology to better meet our homeland security needs. Now, historically we have a long tradition in our country of creating problem solving partnerships between government and our research and development enterprise. And innovation is an important part of President Obama's strategy for economic growth and international competitiveness.

The largest and most prolific of our relationships have often involved national security and have had their foundations actually in the military. For example, many individuals who have delivered this lecture in the past worked on the Manhattan Project. In recent decades, these are indeed partnerships that evolved to support emerging fields like alternative energy and the biomedical sciences.

Today, we have to expand government's collaboration with science well beyond the areas where the collaboration already is strong. And in a deeper, broader partnership on homeland security must be one of these areas. Let me be frank, we need the minds and talents of individuals who are excited about coming into an emerging field. We are the newest and the third largest department of the federal government. It was telling that when we were created, our science and technology directorate was one of only a few components that was actually created afresh, anew, it didn't even exist before.

Now MIT, of course, is the source of one of the great national security collaborations. I just saw some illustrations of it at the Lincoln Laboratory. And they currently work with us on a number of projects. For example, they work with us on the ISIS system, the imaging system for immersive surveillance. And their prototype camera which has already been evolved, as technology does. But I saw the prototype months ago at Logan Airport, which will greatly expand our ability to spot suspicious objects and quickly analyze any breaches in security in the airport environment.

We have a pressing need to cultivate and create new partnerships like these across a wide array of issue areas in order to better secure our hometowns and our homeland. For example, the aviation domain. None of you would be surprised to learn that aviation security is an important part of what we do at DHS. And I'm sure all of you have had the pleasure of taking off your shoes and removing your laptops as you go through airport checkpoints.

And now we don't enforce these requirements for our amusement. We know that terrorists have repeatedly sought to use airplanes as a means to take innocent lives. With the 9/11 attacks, of course, being the most horrific example. But based on recent attempted attacks and the latest intelligence, aviation continues to be a preferred target of terrorists who seek to attack the United States.

The United States has the largest aviation industry in the world. We process two million passengers a day through some 370 airports in the US. Every security measure we have must, as a matter of implementation, be scalable to a size not seen in any other country. And our adversaries continually alter their attacks or their tactics.

Looking first to liquid explosives and then to other nonmetallic explosives like PETN, that was used both in the attempted bombing of a US-bound airliner in December of 2009 and cargo planes out of Yemen just this past October. So as terrorists look to explosives that are difficult to detect, we need not just to respond to the most recent threats, we also have to get ahead of future threats. And technology can help us leap ahead of our adversaries.

Better explosives technology is important. But in fact, it needs to be just one layer of security in a multi-layered system that includes multiple tactics, both seen and unseen. And into all of this, we must factor in the potential for human error. The challenge is not just to roll out new technologies, the heart of the challenge is to apply technology to make this process as effective and smooth as possible for passengers and for cargo. And this means that technologies not only have to be effective, they also have to be fast, they have to be complementary to each other, and they have to be as non-intrusive as possible.

And because aviation and the cargo supply chain are global systems, in order to really secure the aviation system we also need to look toward security solutions that can be applied across the globe. Which means they have to be flexible and cost effective. And of course technologies must support our commitment to protect the privacy and civil liberties of our citizens.

DHS is already testing a range of new technologies to make the passenger experience quicker and less intrusive while still maintaining security. And we're exploring the human and behavioral dimension to gain a better understanding of behavioral indicators of danger. Our overall goal is to have an integrated checkpoint that allows passengers to keep on their shoes, reduces the need for physical searches, and maximizes the likelihood that we will prevent another aviation attack. We call this the airport checkpoint of tomorrow.

But to imagine, design, test, procure, and eventually deploy the checkpoint of tomorrow we need new kinds of expertise. We need managerial and operational expertise to move existing technologies to task. And as we plan for the technology we will need five, ten, twenty years down the line, we need the scientific and engineering expertise to turn our ideas into a reality.

A second homeland security challenge is what is sometimes referred to as the big data problem. Many of you probably deal with this in your own work. Your research brings in reams of data, but what is essential is the ability to glean insight and discern patterns and trends from a mass of information. This is something we deal with every hour of every day as a member of the intelligence community.

Again, I need to mention this, it's important. We first go through a rigorous process of making sure that our civil rights and liberties are protected. We don't take our eye ever off of that ball. But intelligence data is not just a matter of having information. It's also about what one does with the information, and how one figures out what it really means. It's about discerning meaning and information from millions, billions of data points. And when it comes to our security, this is one of our nation's most pressing and serious issues.

Now I mentioned that 2 million airline passengers are processed through our airports every day. We also process 50,000 or so cargo containers, and they come through not just airports, but land and sea ports as well. At the same time, DHS receives more terabytes of data from the intel community. Each day-- intelligence community, not Intel. Intelligence community.

Each day, we receive more terabytes of data than the entire text holdings of the Library of Congress. The National Counterterrorism Center's 24-hour Ops Center receives 8,000 to 10,000 pieces of specific, international counterterrorist information each and every day.

So all of that comes to DHS, and it clearly is too much to suggest that the simplistic connect the dots analogy accurately represents what an analyst has to do. So very quickly you can see that big data, more so than the lack of data, becomes our most pressing problem. And at the same time, the threats implicated by the data are not static. They're continuing to move. We therefore can't overstate the need for software engineers and information systems engineers. We need communications and data security experts. And we need the kind of talent working together to find new and faster ways to identify and separate relevant data from non-relevant data. Then we need to organize the data in ways that analysts, agents, screeners, and guards and operators can use. And we need to get it to them securely and in real time.

The big data problem doesn't apply just to incoming intelligence. As threats continually evolve, we need to get smarter about what anomalies to look for, and therefore design better algorithms with which to deal with them. Simply spotting, say explosives or radiological material, is not enough. We then need to be able to use our detection capability in the field to identify any sort of needle in a haystack. Say a small, fast moving boat carrying illicit and dangerous cargo into a crowded port. These are the challenges we need to confront.

I'll give you another one. I want to mention the challenge of making our society more resilient. So that we can bounce back quickly from any kind of a crisis event. From a terrorist attack to a natural disaster. The trifecta of tragedies in Japan-- an earthquake, tsunami, and a nuclear crisis-- illustrate vividly why resilience is so basic and so important.

Now we know that there are always more things we can do to protect things like our cyber networks and our critical infrastructure. Right now at DHS we're asking how we can ensure that industrial control systems that run our water treatment and our power plants are safe. And how to use the distributive nature of cyberspace as a strength, rather than as a liability that makes it difficult to defend. But the need for greater resilience goes beyond cyberspace.

For example, 90% of Americans live in an area where there is a moderate or high risk of natural disaster. And an almost equally large percentage of our critical infrastructure rests in private hands. And so our FEMA Administrator, Craig Fugate, has been at the forefront of exploring ways to use social media to achieve a number of critical goals during a disaster response. From reaching people during an emergency to locating necessary supplies and moving them where they're needed most.

But we also know we can do more to make homes and buildings more secure and resilient. We can speed the commercialization of innovations in the field of nanotechnology that can help put resilient building materials on the market. Allowing building builders to create structures that can better withstand an earthquake, a flood, or an explosion.

We can move newly developed materials, often based on research at institutions like this, which are strong and lightweight, such as ultra-high performance concrete, into widespread commercial use. There is a wide array of science and engineering challenges in other areas as well. Ranging from detecting nuclear radiation at sea ports to designing public health responses to potential pandemics. And we need our best scientific and technical minds to address these problems.

Now what needs to change, and what is DHS already doing. The array of scientific challenges facing us means that our country's need for scientists, and engineers, and those with a technology policy background is greater than ever. It also means that those, like you, who are receiving an education in these fields must also have an understanding of how research needs to be applied in the field. On a real time, and on a scalable basis. So in terms of research and development, we need a research and development system with the flexibility to absorb and use talents that are located in the R&D enterprise across the nation, inside government and out, in order to help us meet our homeland security needs.

Now this administration is dedicated to advancing research and development on a whole host of issues, as the president made clear in his trip to Boston last week. We know that strengthening these efforts is essential to our nation's continued security and our continued prosperity.

There are probably a lot of you have a great interest in working on scientific issues for the public benefit, but perhaps you have never considered the idea of actual government service. Sometimes, I admit, the technical career paths in government may not appear quite as appealing as they are in academia or in the private sector. If government service at a place like DHS has never been on your radar, you might not appreciate how challenging and rewarding it can be.

So the administration is committed to making scientific careers in government just as challenging, just as fulfilling as careers in the private sector or in academia. And there are important efforts underway in this arena already. The science and technology directorate at DHS, for example, recently issued a solicitation for research that creates incentives in academia and the private sector to propose novel ideas and approaches. Give us in five pages your ideas and your thought before we make you fill out a grant application.

DHS is supporting the president's commitment to strengthen education in the STEM fields by granting 100 fellowships, scholarships, and internships to students in these areas. And we just announced last week a loaned executive program. And we're launching a new cyber workforce initiative to help attract and then retain top cyberspace and cybersecurity professionals. We need, and are looking to hire in our initial batch, 1,000 cybersecurity individuals.

So looking ahead, we want to become better at inviting talented scientists into government across a wide range of agencies and departments. Outside of the actual government labs, the national labs, one absolutely critical aspect of our vision for this department is the development of a strong research community of interest. And the heart of this community will be the faculty, the up-and-coming young scholars at MIT and other leading institutions. And I hope you will share with us your thoughts and advice on how we can support that community of interest in the science and research fields.

But I got to tell you, it will not be enough just to have people who are brilliant bench researchers. We need people who not only know the science, but who also know how to get things done. How to design, manage, and bring big projects to completion. How to apply findings from the lab in the real world and how to navigate complex systems. Organizations like ours have to imagine and develop, to operate, and to procure. We need to see ahead and we need scientists to help us do that.

Now since I became secretary, we have taken many steps to build our procurement workforce. This may sound a little bit dry, but let me tell you, at a place like DHS procurement programs can have huge, long-term impacts. And huge, long-term budgets stretching into billions of dollars. They can affect the capability of governments for decades and the security of our nation for decades as well. These procurements can be big, complex projects. And we need people who are familiar with technologies and their capabilities, but also where technology is going and where our needs are going. We can't be content if we don't and don't have the capability of having science in the lab be transferable to actions in the field.

In sum, we need a model where there's more scientific knowledge applied across government, and more knowledge of government and public policy in our science and engineering communities. So I'd like to paint a picture for some of the younger students here about what science in government should look like by the time you are 40 years old. By that time, it should not be unusual for a top scientist to take a leave from academia, the private sector, and spend a couple of years in government-- hopefully at DHS-- working on solving important science and technological problems.

It happens to an extent today. Right now at DHS we have some top academics in biosecurity, systems engineering, cybersecurity, and behavioral science working with us. But we don't have nearly the number we need. It's not unusual for a lawyer, or an economist, or even a political scientist to leave private practice or to take a sabbatical from academia to work on a particular policy issue at a governmental agency. So we need to do a better job at making a similarly worthwhile and workable path for top scientists to serve the public interest and to help make the nation more secure. We need to work with academia and the private sector to help ensure that a stint like this is seen as a period of valuable service, not as a gap in a resume or a distraction from important projects.

And to build this community of talent, we need to work with scientists in order to better understand and remove the barriers to this kind of exchange. The exchange between government and academia, the exchange between government and the private sector, where science and technology are concerned. That kind of exchange. That ability to go back and forth is what science as public service should look like. A place where scientists are empowered. Where the technical needs of government are fully addressed. Where government service and scientific career paths have greater flexibility, and where there are many ways to contribute even if one is not in the government itself.

DHS is a great place to help this vision get underway. We are a new department. It's a place where all of us, including you, the young scientific leaders of our country, of tomorrow, have an opportunity to come and to have a profound and fundamental impact now. We have tremendous scientific resources in this country. In fact, we lead the world in scientific and technological innovation. This is important because we have a lot of difficult problems that we need our brilliant scientists to solve. And perhaps, most importantly, we have young people who are engaged and who want to use their talents for the public good.

We have to take advantage of this kind of talent and provide scientists an outlet for their goals. And the way we do so must change with the times because public service has to change with the times. Today, deep scientific and technological collaborations are required across an ever broader range of our activities. And we need you, and people like you to join a new generation of Americans in the fight against the new generation of threats to the homeland.

I know, as do you, that science and technology alone cannot guarantee security. Nor can any one government agency simply deliver security to the people it serves. Security, in the end, flows from our home towns and our communities. It requires people to embrace a sense of shared responsibility.

But the nature of today's threats, some of which have their origins in previous periods of scientific advance, mandates that we embrace the benefit of the best that science can offer us. This, to me, is a pretty good definition of science as a public service. Our country needs for this to happen. And I'm looking forward to this kind of engagement with you, with your colleagues, and with our shared futures. Thank you very much.

[APPLAUSE]

HOCKFIELD: I get to present you with the Compton Bowl, in celebration of your attendance here at MIT. Specially designed by MIT's glass lab.

JANET NAPOLITANO: Wow, that's a beauty. Thank you so much.

HOCKFIELD: You're very welcome. We're really glad to have you here.

[APPLAUSE]

Now, I warned the Secretary that we would take questions, and she welcomes them. So there are mics on either side. If you'll line up at the mic, we'll begin with some questions. Go ahead.

AUDIENCE: Hello, I'm from Arizona so it was a real pleasure to hear you speak.

NAPOLITANO: You're from Arizona?

AUDIENCE: I'm from Mesa. Mesa, Arizona.

NAPOLITANO: Oh, good to see you. It's cold here.

AUDIENCE: Yeah.

[LAUGHTER]

I'm interested in the role of public perception when it comes to scientific and technological solutions to security problems. Part of finding these kinds of solutions requires not only believing the scientific evidence on its face, but also making the public understand that scientific evidence. And sometimes there's just a disconnect between beliefs and what people in the scientific community see as, kind of, more objective truth, if you will.

So I wonder, what your approach is to these kinds of disconnects that can take place. For example, if we think about a security checkpoint of the future in an airport, there's a difference sometimes between what people believe is happening in the security process and what technologists say is happening.

NAPOLITANO: Yeah, I get that all the time. People say to me, Janet, why do I have to take off my shoes? Well, you have to take off your shoes because we know that they have-- and when I say they, there's Richard Reid, the shoe bomber-- but others have tried to smuggle things onto planes including material in their shoes. And we don't have the technology to screen quickly enough to be able to tell what's in a person's shoes.

Because those checkpoints, it's the point I was making earlier, it's not enough just to be able to do it. If it takes 20 minutes to do it, it's no good to us. We've got to move 2 million people a day. So I explain that to people.

By the way, I did work as a transportation security officer one Thanksgiving. Not this past year, but the Thanksgiving before. So I'm on the line telling people take off their shoes and put their stuff in the bins. And I will tell you this. First of all, we all owe those TSOs owes a debt of gratitude. That is a very tough job. And there's zero room for error. I will also tell you that I have never seen so many kinds of shoes in my life.

Now the public, I don't think we do a good job. It is hard to break down science for the public in a way they understand. And a great example of that was the coverage of the BP oil spill this past summer. We're trying to explain how the response operation was really working, and what was really happening in the ecosystem of the Gulf, and also along shore. And why it wasn't so simple just to blow up this well in order to shut it down. Why that wasn't a good answer. And why just because somebody had this new technology, that new technology may not necessarily be the answer. It was really tough.

And we could not penetrate the media screen on that. So I think one of the things we've been thinking about is how do we break this down and speak more straightforwardly with people about why we're doing what we're doing, and what some of the limits of technology are. Because in this age where people are watching NCIS or CSI and stuff all the time, they think technology can do everything really fast. And it can't. So we have been doing a lot of thinking and would appreciate your thinking, actually, on how we can better explain technology and science to the public because there is that disconnect.

HOCKFIELD: Over here, please.

AUDIENCE: First of all, thank you for keeping us safe, and I guess I have two questions. The first one is, can you talk a little bit about the ethical implications of running some of these experiments. For example, logistics experiments that allow guns to be smuggled into Mexico, and so forth. And then, I guess my second question is, how open can you be, given all these crowdsourcing technologies and systems mapping tools. How open can you with Homeland Security to help, to have the public provide input for all these models?

NAPOLITANO: First, the initial-- the quote "gun running" into Mexico. If that's what, in fact, occurred. There was-- this involves a particular ATF operation. They're part of the Department of Justice and that's actually under review right now, so I think we need to let that review be completed.

With respect to how do you get inputs from the public itself. The first thing I did today, when I came to Boston, I was with a lot of leaders. And we have launched this very straightforward campaign, and it goes to communications called, "See Something, Say Something." That's the motto. See something, say something.

Here in the Boston transportation, MBTA, you're going to use these big, red backpacks as the sign of the campaign. And the goal is to be force multipliers. To involve the citizenry of the country in their own security. And by that involvement, to help create that sense of shared responsibility. We have deployed it now in New York City, we've deployed it in Amtrak.

Those of you that are going to any of the NCAA games will see that the NCAA is adopting it for their sports arenas. The NFL, the NBA et cetera, et cetera, et cetera. So that's one, just one example of an idea of, how do you get inputs from individual people. And by doing that, create shared responsibility and empower people as well.

HOCKFIELD: Over here, please.

AUDIENCE: So thank you for being here. I have a nine-year-old daughter. The events in Tucson were very moving in a number of ways. So thank you for your work. I also have a lot of friends who are scientists, and my dad was one, and my uncle was a media guy, which brings me to my two questions.

One is, if the observation is that one guy, who's angry, can disrupt America by threatening to burn something. Or actually going out and killing people. Then, perhaps, part of the war we need to keep America safe is a cultural one. And perhaps bottom-up, which is where everybody lives in an every day way, is where we need to do a little bit more a gathering of possibilities. I think it may, perhaps, speak to what he said.

So imagine there's a way to gather, and harvest that, and see patterns that's not overwhelming for people in organizations like yours. Would you welcome that, and who should a consortium of people who are designing that approach, because that's also innovation.

NAPOLITANO: Yeah. I think so, and one of the things we need to be very strong at as a nation is not to be terrorized. I remind people, even after 9/11, the worst attack in our history, the stock market was up and running within four days in New York. We are a very resilient nation. But we have to work to preserve that resilience and people's confidence in that resilience. I mean, we're tough. And we need to be in this environment.

So getting input about how different communities of interest can organize are all things that we are very interested in. And we're also very interested in building community resilience, because a lot of this has to happen at the local level. Federal's too far away.

AUDIENCE: If this is a matter of presenting a pattern that different people in your department say yes to, then they don't have to be experts about the whole final assembled thing. That's innovation, taking things and putting them together in a new pattern that people haven't seen before. That's the question. If it's pattern recognition, who at DHS would welcome that because it's not a hard model. It's a cultural model. And of experts, of the talent in the crowd. Not just the wisdom of the crowd, but actual specific talent.

NAPOLITANO: We would probably move that into our intel and analysis directorate. And that's where we would take it.

AUDIENCE: OK, so online?

NAPOLITANO: Dhs.gov.

AUDIENCE: OK.

NAPOLITANO: Easy.

AUDIENCE: Along with the bins and the shoes.

NAPOLITANO: Yeah, exactly.

AUDIENCE: Secretary, thank you for your service and for coming here today. With regards to airport screening, recently there's been some criticism from the Israeli security services that we do not utilize behavioral, or what could be considered racial profiling, at our airports. So my question to you today is, do we use profiling, and has DHS considered the potential for rights violations and/or the merits of using such techniques?

NAPOLITANO: We do not use profiling. And we do not use it because it's illegal and it's unconstitutional. And it's also not good law enforcement. We're looking for patterns, behaviors, tip offs, indicators that would demonstrate knowledge about what anomalies are that would make those labels, that we can then follow up on. That's what we're looking for. And profiling doesn't give you that.

We do use undercover behavior detection officers in our airports and in mass transit arenas as well. You won't see them. That's what undercover means. And we use other tactics as well.

I'm often asked why we don't do what they do in Israel in our airports. First of all, if they profile, that is illegal under our under our legal system. But secondly, when you go to Israel they have one airport. And they move maybe 50,000 passengers a day. And so they spend a lot more time on each individual passenger. Scalability is a big issue in that regard.

HOCKFIELD: Over here, please.

AUDIENCE: My name is Travis Miller, and I'm in the technology and policy program here. If you'll allow me, I've prepared a couple of comments followed by a question.

[NO AUDIO]

Absolutely, thanks.

Well, thank you for your comments. I just wanted to share that I do strongly disagree with many of your organization's actions though. Particularly the immigrations and customs enforcement. In public speeches you've discussed the importance of beginning immigration reform with enforcement, and I would disagree and offer that immigration reform begins with rapidly opening up legal channels for citizenship. Enforcement clearly has not, and will not, stop immigrants from coming here and the reasons they need to come here are directly linked to this country's domestic and foreign economic policies.

You've suggested that immigrants undermine unions and worker rights. Contrary to that assertion, ICE raids undermine unions and workers' rights. As early as 1993, the AFL-CIO criticized those who exploit public anxiety by making immigrants and refugees scapegoats for economic problems as they recognize that immigrants are not the cause of our nation's problems. I would suggest that the DHS's programs-- such as the Secure Communities programs implemented here in Boston, which is meant to round up criminals, and actually 2/3 of those deported were non-criminals-- that these programs are actually part of the problem, as well as a great threat to American freedom, which is corporate capitalism.

And so my question to you, Secretary Napolitano, is when will you shrink the immigration enforcement and removal program and target the real threats of American freedom, greedy bankers, greedy corporations, and corrupt elected officials?

NAPOLITANO: Well-- Look, here's the way I look at it. And I've been dealing with border and immigration issues a long time. Our nation sorely needs immigration reform. But the executive branch cannot do it without Congress moving. Meaning we would like, for example, to revise the process by which those who receive degrees here in the United States, particularly at institutions like MIT, can remain in this country. But we cannot do that without statutory reform. We do everything we can to make the process as transparent as possible. But we can't, by ourselves, change the law.

The president is committed to changing that law. But he needs a bipartisan group in the Congress, he needs 60 in the Senate in order to accomplish that. So he understands this is a marathon and not a sprint. Immigration reform is always a difficult issue for congresses to address. But we're committed to it, we're going to keep working it.

And with respect to enforcement, we're going to continue to focus and set priorities the way any prosecution office does. Because that's essentially what we are in the ICE area. So in part of our department we have legal citizenship, and in part of our department we have enforcement of our nation's immigration laws. And we have chosen to focus on those who are violating criminal laws in addition to our nation's immigration laws.

And while secure communities, which I won't go into for this purpose, for this lecture, has been controversial. The plain fact of the matter is that the data, as it develops and matures and comes in, is showing that we're actually writing that ship. And instead of workplace raids, we're doing this kind of enforcement and it's working.

HOCKFIELD: We have time for only one more, please.

AUDIENCE: All right. Well, thank you once again, Secretary Napolitano, for coming to MIT.

You talked a lot in your talk about the interconnectedness of science. How sharing between fields is very important and there are some issues about publicization of scientific results. However, there are several fields of scientific advancement that are advancing at such a pace it's become very dangerous.

Like, for instance, in recent decades biotechnology has become such a formidable beast that even in the introductory bio classes here at MIT, one can gain the knowledge to become a very dangerous bioterrorist. So what are some of the issues that you find in--

[NO AUDIO]

Yes, please.

[LAUGHTER]

I'm a physics major, by the way.

NAPOLITANO: Oh, good.

[LAUGHTER]

AUDIENCE: So in all seriousness, though, how can you strike a balance between free sharing of scientific information for the public good, and keeping very dangerous tools and knowledge out of the hands of people with bad intentions for the United States?

NAPOLITANO: You know, I think with perhaps limited exceptions, we have to operate in a world where we assume that we cannot. I mean, I think one of the beauties of the internet is it makes information universally available. And the flip side is that it makes a lot of information about weapons of mass destruction and how to create them, how to build them, and so forth also universally available.

So I think, from my standpoint, what we are working on-- or need to work on-- is how to better detect, surveil, preempt, screen, and look for when somebody is actually successfully trying to introduce something into the air or into the water. So before it has a huge biologic consequence. And if there's a better way to keep information secure, that kind of information, I would be interested in ideas or systems that would do that.

But right now, just what's already available, could make your hair turn gray. And mine is. And so we have to be smart about it. And we have to be interactive about it. And we have to be thinking ahead about it. And we have to be resilient about it. And we have to be tough about it. And I think our country is, but I think we can do even better. All right. Thank you.

HOCKFIELD: Madame Secretary, in thanking you I want to thank you particularly for coming during our 150th anniversary. And your message of mind and hand-- mens et manus, which is our motto-- taking science and technology and deploying it to the greater good, is a great call to public service for our audience. And we could not have had a better speaker today to present this charge to our students and to our faculty. Thanks very much.