PART THREE

Appendices

Appendix A

Reliable Identification for Homeland Protection and Collateral Gains

This paper is presented by the Subgroup on Reliable Identification for Homeland Protection and Collateral Gains, which is chaired by Amitai Etzioni. Members of the subgroup are Robert Atkinson, Stewart Baker, Eric Benhamou, William Crowell, David Farber, Mary McKinley, Paul Rosenzweig, Jeffrey Smith, James Steinberg, Paul Schott Stevens, and Michael Vatis.[1] This paper was written by Amitai Etzioni.

Executive summary

There is strong evidence that having reliable means of personal identification would greatly enhance many of the new security measures introduced since September 11, as well as those that were in place before the attacks. Despite some attempts to make our means of identification more reliable, many of those routinely used in the U.S. are still highly unreliable. We realize that means of identification cannot be made foolproof. However, we believe that very substantial improvements can be made that will greatly enhance our security and that the improvements will have what we call collateral gains (advantages in treating other serious national problems).

In this paper, our focus is on developing purposeful means of identification—issued by governments and by private industry—that can enhance our ability to resolve an individual's identity. Identity resolution should be balanced with the need to maintain accuracy and liability for the principal uses of the means of identification, even though the means of identification may still be used for purposes beyond what was authorized by the issuer.

The members of our subgroup come from different backgrounds. Some have held positions in federal agencies such as the Department of Justice (DOJ), the Federal Bureau of Investigation (FBI), the National Security Agency (NSA), the Central Intelligence Agency (CIA), the Immigration and Naturalization Service (INS), and the Department of Defense (DoD). Some of us are privacy advocates, some elected officials, some policy researchers, some CEOs of high-tech companies. But we all agree that it is necessary to make means of identification more reliable, especially those used in high-security, high-risk areas. We do not call for the introduction of national ID cards; rather, we call for making the multiple means of identification people use when seeking to enter controlled areas—such as airplanes, buildings, and, for incoming immigrants and foreign visitors, the U.S.—more reliable. We believe that we should not rely on any one means of identification, but rather that multiple means of identification are needed, depending on the purposes at hand and the desired level of security. We believe that as the security level of the purpose increases, so too should the reliability of the identification.

Recommendations

We recommend that the Department of Homeland Security (DHS) form a task force whose purpose will be to examine proposals (ours and others) for making the means of identification used within the federal government's jurisdiction (transportation security, border security, immigration, and critical-infrastructure protection) more reliable and to implement—or foster, when the authority for implementation is outside the agency's domain—the needed measures along the lines detailed in this report.

An interagency task force for reliable identification, led by the Office of Management and Budget (OMB), should also be formed. This task force should be composed of representatives of the DHS, the National Institute of Standards and Technology (NIST), the Department of Treasury, the Department of State, the FBI, the NSA, the DoD, and the Department of Transportation, among other agencies, and should examine how these agencies' programs are affected by technical or process issues regarding current means of identification. The task force should collaborate with the DHS in identifying ways to make the means of identification used by all elements of the government, and for privately owned critical infrastructure, more reliable.

Governmental remedies

Because of the severity and urgency of the situation, short-run measures should be introduced first. Meanwhile, more reliable means of identification, which will have longer implementation times, will be studied to determine whether they may later be put into practice. For governmental remedies, we recommend a two-phase process for making more reliable means of identification. The first phase should focus, albeit not exclusively, on how

[1] We are indebted to Deirdre Mead for her extensive research assistance and to Dennis Bailey, Jerry Berman, Marc Dunkelman, Shane Ham, Lara Flint, Joanna McIntosh, Neville Pattinson, Ari Schwartz, and Tom Wolfsohn for their valuable suggestions.

the federal government can assist in making state driver's licenses and state-issued identification cards more reliable as quickly as possible, as they are the most widely used forms of identification in the U.S. However, some of our recommendations will help make other means of identification—such as passports and visas—more reliable as well.

The second phase should initially focus on studying whether biometric and cryptographic technologies may be used to make driver's licenses and other forms of identification more reliable, and on determining which technology, if any, is appropriate and how the technology and enrollment processes may be implemented, given the primary purposes and uses of these means of identification. These studies should also address ways in which we can protect privacy and civil liberties while achieving more reliable means of identification. If an appropriate technology is identified, the technological wherewithal is available, enrollment processes have been carefully refined, and privacy concerns have been addressed, biometrics might be added to driver's licenses and other means of identification. Finally, some of us believe that a pure biometrics system may, in the long run, be preferred; others feel this idea is highly dubious and subject to error or fraud in the base technologies, the enrollment processes, or the people implementing the processes. Hence, at this stage, pure biometric technology should merely be studied.

All improvements to our means of identification require attention to the following three elements: (1.) the processes (the enrollment process, higher levels of validation, network verification of the information on a form of identification, and the introduction of audit trails); (2.) the personnel (improved training, selection, and oversight); and (3.) the technologies involved (biometrics; smart cards; scanning devices to verify the information on the card against information on the network; cryptography, etc.).

RECOMMENDED MEASURES TO MAKE DRIVER'S LICENSES MORE RELIABLE

Phase One

1. The federal government should conduct research on affordable methods of improving identification systems and making the entire identification mechanism more verifiable. The government should encourage states to implement the studies' findings and adopt interstate standards, and to put them into practice through the use of grants.
2. In each of the jurisdictions, the fines and penalties for individuals who possess, attempt to obtain, or sell counterfeit or false identification should be increased, as should the fines and penalties for individuals who knowingly supply such identification or knowingly allow people who are using it to enter controlled areas.

Processes

1. Paper breeder documents should be standardized.

2. Birth- and death-certificate records should be digitized and searchable in all states. One existing program that addresses this need and therefore deserves further support is the E-Vital program, which establishes a common process through which birth- and death-record information can be analyzed, processed, collected, and verified. Yet we believe that the holder of such data should have privacy-protection measures and enforcement policies in place that address issues such as who may access the data and for what purposes. For instance, to protect civil liberties, audit trails should be established.

3. States should verify that the social security number a person presents when applying for a driver's license is not someone else's. The Department of Transportation should develop an approach to providing the needed funds so states will be encouraged to undertake this verification step.

4. Federal legislation should tie the expiration date of a driver's license or state-issued identification card to the expiration dates of a foreign visitor's visa, as some states have already done.

5. State driver's licenses and identification cards should meet minimum uniform standards concerning their data content and the verifiability of the credential.

Personnel

1. State motor vehicle agencies should provide their employees with ongoing, detailed training in how to spot counterfeit or false documents. They should also provide law enforcement personnel with guidelines on how to check the validity of driver's licenses.

2. State motor vehicle agencies should launch aggressive oversight, auditing, and anticorruption policies to help prevent fraud and to make it easier to detect fraud when it occurs in the driver's license issuing process.

Phase Two

Technology

We suggest the need for various studies. These would best proceed on two levels: (1.) meta-analysis, overview, and codification of what is known (the results of various ongoing studies in the private sector and in the government); and (2.) the issuance of Requests for Proposals (RFPs) to invite additional studies that would cover well-known lacunae or those lacunae the analysis of the first level—the summaries of the state of the art—would reveal.

Private sector remedies

We believe private sector alternatives to making means of identification more reliable should also be examined. DHS officials should convene a panel of representatives from corporations to determine incentives that would encourage the private sector to develop for use various purposeful cards (credit cards, medical cards, etc.) that are more reliable and verifiable—for example, those incorporating, on a voluntary basis, the use of pictures or biometrics. Among the ideas to be examined is whether such cards could be used to provide secondary verification of identity.

Accountability and privacy protections

Concerns about privacy and other civil liberties should be addressed in all matters, including all studies, regarding the development of more reliable means of identification. For personal data, such as digitized birth- and death-certificate records, we emphasize that those who hold the data should have privacy-protection measures in place to address issues such as who may access the data and for what purposes. There must also be enforcement policies. For instance, audit trails, which could detect unauthorized use of data and thus help deter it, should be established.

We also recommend that the DHS set up a body of public and private sector members to review proposals and measures regarding more reliable means of identification for homeland security purposes. This body should also examine the measures' effectiveness and their privacy implications. It should operate under the criteria specified in the Federal Advisory Committee Act.

Reliable identification is essential to homeland protection

The prevalence of means of identification that are readily falsified or are obtained in a fraudulent manner is a particular vulnerability of our homeland security. Unless substantial improvement is made in this area, many new systems—and many other programs that help protect the public—will continue to be severely hampered. These include the foreign student tracking system (SEVIS) and the National Security Entry-Exit Registration System (NSEERS)—both of which will eventually be part of the U.S. Visitor and Immigrant Status Indication Technology program (U.S. VISIT)—as well as the Computer Assisted Passenger Prescreening System (CAPPS II) and current watch lists maintained by the FBI, the CIA, and the Bureau of Citizenship and Immigration Services (BCIS).

Press reports suggest that the reluctance of the White House and Congress to deal with the means by which people are identified stems from concerns that an action taken in this area would entail the introduction of a national ID card,[2] which faces strong opposition from the left and right and from much of the U.S. citizenry. We cannot stress strongly enough that we are not recommending such a course of action. Our concern here is with what we call purposeful means of identification: means issued by governments and by private industry for specific purposes. People are not required to carry these means of identification with them at all times and to show them upon demand, as is the case with national ID cards used in other countries, such as Belgium and Spain.

Many different types of purposeful means of identification, not necessarily cards, are used by people seeking access to controlled areas—airplanes, secure facilities, most public buildings, and numerous private ones. For the 40 million foreigners who travel to the U.S. each year for vacation, to attend school, or to conduct business, the U.S. itself is a controlled area.

In addition, we believe that our country should not rely on any one means of purposeful identification, but rather that multiple means of identification are needed, depending on the purposes at hand and the desired level of security. The credentials required to obtain a library card at a local public library, for example, should be less than those required of someone who will be responsible for transporting haz-

[2] See, for example, Mark Helm, "As Term Nears End, Armey Not Afraid to Speak His Mind," *Washington Post*, 18 August 2002, A7; Bill Miller, "Homeland Security Cost Weighed," *Washington Post*, 17 July 2002, A8; and Bill Miller and Juliet Eilperin, "House GOP Leaders Unveil Homeland Bill," *Washington Post*, 19 July 2002, A4.

ardous materials across the country. We believe that having more than one identifying document is necessary for the protection of privacy and civil liberties and, furthermore, that relying on any single document for identification makes the system more easily manipulated by terrorists.

Next, as we illustrate here, many of the means of identification routinely used in the U.S. are still highly unreliable. Deliberations about ways to improve them often focus on technical aspects only. Yet all three elements of how individuals are identified—the processes, personnel, and technologies involved—need to be stressed and improved.

We realize that means of identification cannot be made foolproof, but we believe that very substantial improvements can be made and that these will greatly enhance our security. These improvements will have what we call collateral gains, or advantages in treating other serious national problems.

Unreliable means of identification severely hamper homeland security

We next present evidence in support of our observation that, despite some recent improvements, the prevailing means of identification—which are commonly relied upon in the U.S.—are woefully inadequate.

The 100-percent failure rate of border security

Robert J. Cramer, managing director at the General Accounting Office's (GAO) Office of Special Investigations (OSI), reported to our group the results of an investigation the GAO conducted between September 2002 and May 2003: In every instance when agents attempted to enter the U.S. from Western Hemisphere countries using counterfeit driver's licenses and birth certificates with fake identities, they were successful. The border-patrol agents, without exception, failed to realize that the documents were not authentic. For these security tests, OSI agents used widely available computer-graphics software—which can be found in most average homes—to create counterfeit documents.

In the course of this investigation, OSI agents used counterfeit documents and false identities to enter the U.S. from four countries. It is important to keep in mind that U.S. citizens—or people claiming to be U.S. citizens—seeking to enter the U.S. from Western Hemisphere countries are not required to show a passport. Instead, they are required to prove U.S. citizenship. This may be done through a state-issued birth certificate or a baptismal record, and photo identification—for instance, a driver's license. Or, as the GAO states, "Since the law does not require that U.S. citizens who enter the U.S. from Western Hemisphere countries present documents to prove citizenship, they are permitted to establish U.S. citizenship by oral statements alone."[3] Teams of two OSI agents tried to enter the U.S. from Canada three times, from Mexico two times, from Jamaica one time, and from Barbados one time. Each time, agents were able to cross the border—whether at an airport, a land-border crossing, or a seaport of entry—when border-patrol agents failed to recognize that the documents were counterfeit.[4]

Federal buildings and airports are highly porous

In April and May of 2000, the GAO's OSI agents tried to gain access to 19 federal buildings and two airports using counterfeit law enforcement credentials that were either acquired from public sources or created using commercial software packages, information from the Internet, and an ink-jet color printer. Agents gained entry to 18 of the 21 sites on their first attempt; the other three sites were successfully entered on the second attempt. The buildings to which the agents gained entry included some of the most sensitive, and presumably most secure, facilities in our country: the CIA headquarters, the Pentagon, the FBI headquarters, the Department of State, the DOJ, and others.[5]

Upon entering these buildings or the airport terminals, the undercover agents carrying counterfeit credentials declared that they were armed law enforcement officials. They passed through security without being screened, even though one agent always carried a valise. Robert H.

[3] Prepared Testimony of Robert J. Cramer, managing director, OSI, GAO, before the House Judiciary Subcommittee on Immigration, Border Security, and Claims on Counterfeit Documents Used to Enter the U.S. From Certain Western Hemisphere Countries Not Detected, 108th Cong., 1st Sess., 13 May 2003 (GAO-03-713T).

[4] Ibid., and Prepared Testimony of Robert J. Cramer, managing director, OSI, GAO, before the Senate Committee on Finance on Weaknesses in Screening Entrants Into the U.S., 108th Cong, 1st Sess., 30 January 2003 (GAO-03-438T).

[5] Prepared Testimony of Robert H. Hast, assistant comptroller general for investigations, OSI, GAO, before the House Judiciary Subcommittee on Crime, on Breaches at Federal Agencies and Airports, 106th Cong., 2nd Sess., 25 May 2000 (GAO/T-OSI-00-10).

Hast, assistant comptroller general for investigations with the OSI, reported, "At the 21 sites that our undercover agents successfully penetrated, they could have carried in weapons, listening devices, explosives, chemical and biological agents, devices, and/or other such items or materials."[6]

Another troubling finding was that at 15 of the 16 facilities, agents were able to stand directly outside the suites of agency heads and cabinet secretaries. The five times agents attempted to enter the suites, they were able to do so. Undercover agents also were able to enter restrooms near the agency heads' or cabinet secretaries' suites, where they could have left dangerous materials without having been detected.[7]

Airport officials did not detect the counterfeit documents either. Airline ticket agents readily gave the undercover OSI agents law enforcement boarding passes, and although the procedures for getting through security varied at the two airports, none of the agents nor their valises were screened by security personnel.[8]

In response to these findings, 19 of the 21 agencies and airports that were part of the original GAO study responded that they had taken specific actions to enhance their security.[9] However, a task force investigation into Washington, DC–area airports in 2001 revealed that those airports' general security systems remained lax. The task force, formed by U.S. Attorney Paul McNulty of the Eastern District of Virginia, examined the records of airport employees who held Security Identification Display Area badges, which allow access to secured areas of Dulles International and Reagan National Airports.[10] As McNulty reported to the House of Representatives, the investigation found that "75 airport workers used false or fictitious social security account numbers to obtain security badges, and that afforded them unescorted access into the most sensitive areas of our airports." He went on to say, "Many of these airport workers also used the same false or fictitious social security number to obtain Virginia driver's licenses, fill out immigration forms, or apply for credit cards."[12]

The Washington, DC–area airports were not the only ones at which individuals used fraudulent means of identification to obtain security passes. After the September 11 terrorist attacks, an investigation, directed by the DOJ, into employees at the Salt Lake City International Airport found that "61 individuals with the highest-level security badges and 125 with lower-level badges … misused social security numbers" to obtain security badges or fill out employment-eligibility forms.[13]

Military facilities are like an open book

When the GAO's OSI agents used false means of identification—a fake ID card from a fictitious agency within the DoD—they were able to enter areas controlled by the military (areas in which weapons are stored between stages of transport across the country). Moreover, the undercover agents were allowed unhampered access to the weapons themselves. This observation is based on OSI Managing Director Cramer's report to our group. The GAO report on this matter has apparently proven either so damaging to national security or so embarrassing to the government—or both—that it has been withdrawn from circulation.

Fraudulent documents are used to enter the U.S.

INS officials intercepted more than 100,000 fraudulent documents each year between fiscal years 1999 and 2001. These documents included border-crossing cards, nonimmigrant visas, alien-registration cards, and U.S. and foreign passports and citizen documents, as well as other documents.[14] While every intercept of a fraudulent document is a success, many are not caught. This is evidenced

6 Ibid.

7 Ibid.

8 Ibid.; and Letter from Robert H. Hast, managing director, OSI, GAO, to the Honorable Lamar Smith, Chairman of the House Judiciary Subcommittee on Crime regarding Security Improvement Inquiry, 31 August 2001 (GAO-01-1069R).

9 Letter from Hast (GAO-01-1069R). One agency, the CIA, did not provide a specific response to the inquiry, and the other agency, the U.S. Courthouse and Federal Building in Orlando, Florida, was not part of the follow-up. However, the GAO reports it contacted the U.S. Marshals Service and the General Services Administration, which are responsible for the security of judicial facilities and federal buildings.

10 DOJ Press Release, "Attorney General Statement Regarding Airport Security Initiative," 23 April 2002. Available at http://www.usdoj.gov/opa/pr/2002/April/02_ag_246.htm. Accessed 25 June 2003.

11 Prepared Testimony of Paul J. McNulty, U.S. Attorney for the Eastern District of Virginia, before the House Judiciary Subcommittee on Crime, Terrorism, and Homeland Security and the Subcommittee on Immigration, Border Security, and Claims, 107th Cong., 2nd Sess., 25 June 2002.

12 Ibid.

13 Office of the Inspector General, Social Security Administration, *Social Security Number Integrity: An Important Link in Homeland Security*, Management Advisory Report, May 2002 (A-08-02-22077).

14 Prepared Testimony of Richard M. Stana, director, Justice Issues, GAO, before the House Judiciary Subcommittee on Crime, Terrorism, and Homeland Security and Subcommittee on Immigration, Border Security, and Claims on Identity Fraud, 107th Cong., 2nd Sess., 25 June 2002 (GAO-02-830T).

by the fact that in a 20-month period between October 1996 and May 1998, the INS reported that "about 50,000 unauthorized aliens were found to have used 78,000 fraudulent documents to obtain employment."[15]

We cannot assess to what extent this problem has been alleviated since September 11, but the following reports suggest that it is far from resolved. Raids in the Seattle area in September 2002 netted enough computer equipment and specialty paper to print more than 800 fraudulent documents, including driver's licenses, social security cards, green cards, and Mexican driver's licenses.[16] In Washington, DC, raids resulting from an ongoing investigation, which began in April 2002, have netted more than 1,000 fraudulent documents and nearly 50 arrests.[17] In one bust during this ongoing investigation, authorities confiscated more than 500 fake residency cards, social security cards, driver's licenses, and other IDs at a single residence. Cynthia O'Connell, acting director of the Identity Fraud Unit of the Bureau of Immigration and Customs Enforcement (BICE), reported in August 2003 that "there are not enough agents to do it all, especially after September 11."[18]

Terrorists use them too

Many of the September 11 hijackers and their associates have been found to have used counterfeit social security numbers (ones that were never issued by the Social Security Administration [SSA]). Meanwhile, one of the hijackers used the social security number of a child, and other hijackers used numbers that had been associated with multiple names.[19] This fake or counterfeit information seems to have been used by the hijackers to obtain driver's licenses. Some of the hijackers held multiple licenses from states including Virginia, Florida, California, Arizona, and Maryland. Only one of the hijackers appears not to have possessed a state-issued form of ID, according to Senator Richard Durbin at his hearing on driver's licenses in April 2002.[20] It should be noted, too, that Timothy McVeigh used a fake ID to rent the Ryder van that exploded in front of the Murrah Federal Building in Oklahoma City in April 1995.[21]

In short, the urgent need for more reliable means of identification for homeland security is evident. Our current means of identification are inefficient, tedious, and labor intensive. They impose a nontrivial transaction cost on ID verification. A side effect of this inefficiency is that we cannot verify IDs as often as we need to—or as often as we should—and this makes our current means of identification less effective than they should be.

New security measures and systems presume reliable means of identification

In other papers included in this report, we suggest an array of new measures to improve our homeland security. And in the Task Force's first report, we called on analysts to conduct wide scans to identify vulnerabilities and to utilize that knowledge to focus on known concerns. This process includes identifying potential targets and the means that could be used to attack them, as well as analyzing information about individuals and groups of people (including their goals, capabilities, and networks) who pose a threat to our country.[22] Reliable means of identification are necessary for the analysts to identify the individuals and groups who pose a threat to homeland security.

Again, we stress that we are not claiming that more reliable means of identification would solve all security problems. Nor are we implying that because false IDs can be readily obtained, it is impossible for law enforcement to find wanted terrorists. We do not claim that new systems, such as SEVIS and U.S. VISIT, or older systems, such as watch lists, are blind. We merely state that these systems would become much more effective if the processes of issuing IDs, and the technologies used to issue them, were substantially improved.

15 Ibid.

16 Diane Brooks, "Raids Net Pile of Fake IDs," *Seattle Times*, 14 September 2002, B1.

17 Warren A. Lewis (interim director, Washington District Office, BICE, DHS), letter to the editor, *Washington Post*, 17 May 2003, A24.

18 Mary Beth Sheridan, "Raids Don't Stop D.C. Street Trade in Fake U.S. IDs," *Washington Post*, 3 August 2003, A1.

19 Prepared Testimony of James G. Huse, Jr., inspector general, SSA, before the House Judiciary Committee's Subcommittee on Crime, Terrorism and Homeland Security and Subcommittee on Immigration, Border Security, and Claims, 107th Cong., 2nd Sess., 25 June 2002.

20 Statement of Senator Richard Durbin before the Senate Governmental Affairs Committee's Restructuring and the District of Columbia Subcommittee on Fake or Fraudulently Issued Driver's Licenses, 107th Cong., 2nd Sess., 16 April 2002.

21 Ibid.

22 Markle Foundation Task Force, *Protecting America's Freedom in the Information Age: A Report of the Markle Foundation Task Force* (New York, NY: Markle Foundation, October 2002), 25–26.

Driver's licenses are still the weakest link in a weak chain

Driver's licenses and state-issued identification cards are classic examples of multipurposeful means of identification that deserve special attention. The vast majority of Americans over 16 years of age possess a driver's license, one of the few identification documents that is widely accepted as proof of ID or age. When boarding a plane, cashing a check, purchasing alcohol, or conducting similar activities, most Americans are asked to show ID. Other forms of ID, such as passports or military IDs, are held by much smaller segments of the population. When asked for identification, most Americans present a driver's license. Of course, driver's licenses are not created for this purpose, and their reliability level is inadequate for the security uses for which they are commonly employed.

Before September 11, it was very easy to obtain driver's licenses in the U.S. using false or counterfeit documents, although it was more difficult in some states than in others. One could even purchase a counterfeit driver's license on the street or on the Internet. Terrorists took advantage of these weak documents. Seven of the September 11 hijackers obtained Virginia driver's licenses by submitting false information to prove residency in the Commonwealth. The hijackers (and surely many others) took advantage of the fact that proof of residency could be obtained with a notarized affidavit from another Virginia resident. According to Paul J. McNulty, two of the hijackers paid an illegal immigrant $100 to vouch for their residency.[23]

In short, driver's licenses and state-issued identification cards for nondrivers are being very widely used for security-identification purposes—to board airplanes and to enter public and private buildings, including legislatures, courts, government agencies, and numerous corporations. Yet driver's licenses are still a very unreliable means of identification. Since September 11, the stakes involved in having a reliable ID system have been raised significantly.

Some loopholes have been closed in the wake of the September 11 attacks (for example, in Virginia, the notarized affidavit was taken off the list of acceptable documents for proof of residency; and in Florida, Governor Jeb Bush ordered that driver's licenses for foreigners expire at the same time as their visas), but false driver's licenses can still be obtained easily.

Between July 2002 and May 2003, the GAO's OSI agents conducted security tests in seven states and in Washington, DC, to determine whether state motor vehicle agencies would issue driver's licenses to applicants who presented counterfeit "breeder" documents,[24] such as counterfeit birth certificates, driver's licenses, and social security cards. As with the other GAO investigations, undercover OSI agents created fictitious identities and counterfeit documents using off-the-counter computers, printers, and software. The investigation found that department of motor vehicles (DMV) officials generally did not recognize that the documents they were presented were counterfeit. Therefore, DMV officials issued genuine driver's licenses to the inspectors using the fictitious identifying information on the counterfeit breeder documents. In instances where DMV officials noted irregularities in the counterfeit documents, they still issued driver's licenses to the undercover agent and returned the counterfeit documents to him or her.[25] It remains clear that despite attempts by some states to make their driver's license systems more reliable, much more work remains to be done.

Additionally, there are still many people ready and willing to sell stolen or fake social security numbers and counterfeit birth certificates, which are then used to obtain false or counterfeit driver's licenses. In August 2003, it was reported that phony ID cards, including social security cards and driver's licenses, still could be purchased in Washington, DC, for anywhere between $20 and $135.[26] The low cost suggests these IDs are readily available.

Efforts to make identification more reliable in the short run are most likely to involve driver's licenses and state-issued identification cards—and thus motor vehicle agencies. There is no sense in ignoring that driver's licenses and state-issued identification cards are used for homeland protection. Therefore, it is important to identify the weaknesses in the current identification system. (In a later section, the subgroup will point to ways to improve driver's licenses and state-issued identification cards.) This discussion will focus on three areas of weakness in particular: the processes, personnel, and technologies involved.

[23] Prepared Testimony of McNulty.

[24] Breeder documents are basic documents that an individual needs to present to obtain other documents, such as driver's licenses or passports. Breeder documents include birth certificates, social security cards, and baptismal records.

[25] Prepared Testimony of Robert J. Cramer, managing director, Office of Special Investigations, GAO, before the Senate Committee on Finance on Counterfeit Identification and Identification Fraud Raise Security Concerns, 108th Cong., 1st Sess., 9 September 2003 (GAO-03-1147T).

[26] Sheridan, "Raids," A1.

WEAKNESSES OF DRIVER'S LICENSES AS RELIABLE MEANS OF IDENTIFICATION

Processes

1. Fraudulent breeder documents (for example, birth certificates, social security cards, baptismal records, etc.) often pass for the real thing. The wide availability of sophisticated graphics software programs and high-quality color printers, as well as how-to books, makes it easy to create counterfeit breeder documents.[27]

2. A state that issues a driver's license based on counterfeit breeder documents threatens the reliability of the entire system, as driver's licenses issued in one state are honored by all others. Wrongdoers seek out states with the weakest protections against false identification.

3. States have differing rules about the issuance of driver's licenses or state-issued identification cards to foreign visitors. Some states tie the expiration date of the foreign visitor's license to his or her visa expiration dates, while other states allow foreigners' driver's licenses to expire at the same intervals as citizens' licenses.

4. Each state issues its own license, and there are no standard minimum requirements. For instance, some states place the driver's photo on the left side of the card; others on the right. States also use a wide range of authentication features, including holograms, bar codes, multiple photos, and magnetic strips. With these differences, Transportation Security Administration (TSA) personnel, police, retail clerks, and bartenders in one state may not know what a license in any of the other 49 states looks like, nor how reliable a document it is.

Personnel

1. Some employees at motor vehicle agencies have been easily bribed into issuing false driver's licenses.[28]

2. It is often difficult for the personnel issuing driver's licenses to identify counterfeit or false breeder documents, as the GAO's recent investigation notes.[29]

3. State motor vehicle agency personnel do not always follow security procedures and are not always alert to the possibility of fraud, as the GAO's recent investigation notes.[30]

Technology

1. Many of the identifying features currently used in driver's licenses are not the most reliable; for instance, a person's eye color can be altered through the use of contact lenses, and weight often varies from what is listed on the card.

2. Most driver's licenses are easy to tamper with or forge. As with breeder documents, the wide availability of sophisticated graphics software programs and high-quality color printers, as well as how-to books, make it easy to create counterfeit IDs.[31]

These weaknesses in the current driver's license system need to be addressed to make our means of identification more reliable. Improvements will not only help our homeland security but will also have collateral gains, which will be discussed later.

Recommendations

This section of the report focuses on actions that should be taken by the government and might be taken by the private sector to make more reliable means of identification. In other words, we are seeking to strengthen the forms of ID that we currently have or may want to develop (in the case of private sector cards). Once again, it is important to stress that we are discussing ways to strengthen multiple means of identification—especially those means used for security purposes—and that we are not advocating a single identification system. As we have stated, as the security level of the purpose for which the card is used increases, so too should the reliability of the identification. Thus, it may often be necessary to rely on multiple means of identification. For instance, a driver's license should be more reliable than a college ID card, since a driver's license is used to gain entry into areas

[27] How-to books, such as John Q. Newman, *The ID Forger: Homemade Birth Certificates and Other Documents Explained* (Port Townsend, WA: Loompanics Unlimited, 1999), are available for purchase from mainstream retailers like Amazon.com.

[28] See, for example, Allan Legel, "Ex-Clerk Accused of DMV Fraud," *Washington Post*, 10 January 2003, B2; Christopher Quinn, "Bribery in Driver's Tests?" *Atlanta Journal Constitution*, 19 January 2002, 1A; and Ronald Smothers, "State Report to Outline Lapses in Security at DMV Offices," *New York Times*, 7 November 2002, A28.

[29] Prepared Testimony Cramer (GAO-03-1147T).

[30] Ibid.

[31] How-to books, such as Max Forge's *How to Make Driver's Licenses and Other ID on Your Home Computer* (Port Townsend, WA: Loompanics Unlimited, 1999), are available for purchase from mainstream retailers like Amazon.com.

such as airports and federal buildings, while a college ID is used to gain entry into a dining hall. These two purposeful means of identification serve widely differing functions—and each card is needed for its specific purpose. Our goal in creating more reliable means of identification is to fashion procedural speed bumps that make life unreliable for terrorists, but not to unduly burden law-abiding Americans in the process.[32]

Before we move on to examine ways in which the government and private sector can help make means of identification more reliable, a few general recommendations about how to proceed deserve to be mentioned.

We recommend that the DHS form a task force whose purpose it is to examine proposals (ours and others) to make means of identification used within its area of jurisdiction (transportation security, border security, immigration, and critical-infrastructure protection) more reliable and to implement—or foster, when the authority for implementation is outside its domain—the needed measures along the lines detailed in this report.

An interagency task force for reliable identification, led by the OMB, should also be formed. The interagency task force should be composed of representatives of the DHS, the NIST, the Department of Treasury, the Department of State, the CIA, the FBI, the NSA, the DoD, and the Department of Transportation, among other agencies, and should examine how those agencies' programs are affected by technical or process issues regarding current means of identification. This task force should collaborate with the DHS in identifying ways to make the means of identification used by all elements of the government, and for privately owned critical infrastructure, more reliable.

Governmental remedies

Because of the severity and urgency of the situation, short-run measures should be introduced first. Meanwhile, more reliable means of identification, which have longer lead times, will be studied to determine whether they may later be put into practice. This section will primarily focus on driver's licenses and state-issued identification cards, since they are, by far, the most widely used forms of identification issued by governmental agencies; however, some of these recommendations will help make other means of identification, such as passports and visas, more reliable as well.

There are numerous possible approaches from which to choose. We recommend a two-phase process toward making more reliable means of identification. The first phase will focus, albeit not exclusively, on how the federal government can assist in making state driver's licenses and state-issued identification cards more reliable as quickly as possible.

The second phase should initially focus on studying whether biometric and cryptographic technologies might be used to make driver's licenses and other forms of identification more reliable, and on determining which technology, if any, is appropriate and how the technology, verification, and enrollment processes may be implemented, given the primary purposes and uses of these means of identification. These studies should also address ways to protect privacy and other civil liberties while achieving more reliable means of identification. If an appropriate technology is identified, the technological wherewithal is available, enrollment processes have been carefully refined, and privacy concerns have been addressed, biometrics might be added to driver's licenses and other means of identification. Finally, some of us believe that a pure biometrics system may, in the long run, be preferred; others feel this idea is highly dubious and subject to error or fraud in the base technologies, the enrollment processes, or the people implementing the processes. Hence, at this stage, pure biometric technology should merely be studied.

Behind these specific recommendations is the assumption that all improvements to our means of identification require attention to three elements: the processes (the enrollment process; higher levels of validation; verification of the information on the card against information held on a network, at least when the ID is used for access to sensitive facilities; and audit trails); the personnel (improved training, selection, and oversight); and the technologies involved (biometrics, smart cards, scanning systems for network verification, cryptography, etc.). Each of these issues will be examined separately below.

RECOMMENDED GOVERNMENTAL REMEDIES FOR IMPROVEMENTS TO OUR MEANS OF IDENTIFICATION

Phase One

We recommend that the federal government conduct research on affordable methods of improving identi-

[32] We thank Jerry Berman, president of the Center for Democracy and Technology, for making this point.

fication systems and making the entire identification mechanism more verifiable. We believe that the research should devote due attention to concerns about privacy and civil liberties. The government should encourage states to implement the studies' findings, to adopt interstate standards, and to put them into practice using grants.

These studies, which should address the three elements—processes, personnel, and technologies—will be of great assistance to states that are facing budget crunches and may not be able to afford to conduct such studies on their own.

We recommend that in each jurisdiction, the fines and penalties for individuals who possess, attempt to obtain, or sell counterfeit or false identification should be increased, as should the fines and penalties for individuals who knowingly supply such identification or knowingly allow people who are using it to enter controlled areas.

Processes

Paper breeder documents should be standardized, and birth- and death-certificate records should be digitized and searchable in all states.

The GAO's September 2003 report on the ability of undercover agents to obtain genuine driver's licenses using counterfeit documents highlights the problems with breeder documents.[33] Birth certificates are particularly problematic because they are issued by numerous jurisdictions and vary widely in format. This will make it easier for DMV officials—and other officials who issue means of identification, such as passports—to recognize counterfeit documents. We also recognize the argument that standardization of the documents may make breeder documents easier to fake in the long run. Digitizing breeder documents would allow DMV officials and others—such as Department of State officials who issue passports—to access birth- and death-certificate records electronically and reduce questions about the authenticity of paper documents.

The holders of this data should have privacy-protection measures (including audit trails) and enforcement policies in place, in order to control access to the data and to define specific purposes for which access to the data would be granted.

We believe the E-Vital program should be well funded once initial testing of the program shows its merits.

Only some states have made progress in making birth- and death-certificate records electronic. The good news is that the federal government has launched an initiative in this area; the bad news is that the initiative is still in its early stages. The federal initiative, called E-Vital, is establishing a common process through which birth- and death-record information can be analyzed, processed, collected, and verified.[34] This initiative will create a federal information repository of birth- and death-certificate records that will be electronically searchable. Because deaths will be certified online, this initiative will greatly decrease the amount of time it takes for a person's death to be officially reported to the SSA. However, there are both institutional and financial hurdles to overcome. Marsha Rydstrom, the SSA's project manager for E-Vital, said that the program faces problems in states that resist measures by the federal government to regulate management of state data. And there are funding issues, since the program's cost could range between $.5 and $5 million in each state, depending on the state's current capabilities.[35]

We believe that an elementary step in ensuring the validity of driver's licenses is to verify the social security number a person presents as his or her own when applying for a license.

State motor vehicle agencies are supposed to collect social security numbers from driver's license and state-issued identification-card applicants.[36] Motor vehicle agencies are allowed, but not required, to access the SSA's online database to verify the identity of the applicant. Prior to September 11, only 12 states used the Social Security Online Verification System (SSOLV) to verify the authenticity of social security numbers submitted to their DMV, according to the SSA.[37] States may choose to verify the authenticity of the driver's license applicant's social security number in two ways: first in real time, through an online check, and

33 Prepared Testimony of Cramer (GAO-03-1147T).

34 For more information, visit http://www.whitehouse.gov/omb/egov/gtog/evital.htm.

35 Judi Hasson, "Electronic Death Records 'Vital' at SSA," *Federal Computer Week*, 1 April 2002.

36 Under the Personal Responsibility and Work Opportunity Reconciliation Act of 1996, states are to collect the social security number of driver's license applicants on their application. See U.S. Code, vol. 42, sec. 666a (1996). The GAO reported in 2002 that six states still were not collecting the social security numbers of driver's license applicants. See GAO, *Child Support Enforcement: Most States Collect Driver's SSNs and Use Them to Enforce Child Support*, Report to the Subcommittee on Human Resources, Committee on Ways and Means, House of Representatives, February 2002 (GAO-02-239).

37 Office of the Inspector General, SSA, *Congressional Response Report: Terrorist Misuse of Social Security Numbers*, October 2001, 5 (A-08-02-32041).

second through batch checks, in which multiple checks are performed and reported at a later time, generally within 24 to 48 hours.[38] The number of states currently using the system stands at only 24 states and Washington, DC, according to the GAO.[39] That is, the majority of states still do not undertake this minimal verification step. Thirty-four state governments have entered into agreement with the SSA to use either the batch or online identification system, according to the American Association of Motor Vehicle Administrators, but problems with the performance and reliability of the SSOLV system have prevented any new states from being able to use the SSOLV since the summer of 2002.[40]

According to the GAO, one reason states do not use the SSOLV is cost.[41] Since states are strapped for funds and the verifications would require additional time, money, and work, we recommend that the Department of Transportation develop an approach to providing the needed funds, so states will be encouraged to undertake this verification step. Electronic birth- and death-certificate records will help immensely in solving this problem, though measures to verify social security numbers should not be stalled while E-Vital is still being tested.

We recommend that federal legislation tie the expiration date of the driver's license or state-issued identification card to the expiration date of the foreign-visitor's visa, as some states have already done.

States have varying rules for issuing driver's licenses to noncitizens. Some tie the expiration of the driver's licenses to the expiration of the visa, while others use the same expiration interval as that used for U.S. citizens.

We recommend that state driver's licenses and identification cards meet minimum uniform standards concerning the data content and the verifiability of the credential.

Driver's licenses vary greatly from state to state. Some states, such as Massachusetts, place multiple pictures on driver's licenses—larger and smaller versions of the same picture. In some states the picture appears on the left side of the license, while in other states it is located on the right side. Some states use a single bar code on their licenses; others use multiple bar codes; and some licenses do not have bar codes at all. The use of holograms, too, is inconsistent. These uniform standards can also address problems regarding the ease with which driver's licenses can be fraudulently altered or forged. For access to sensitive facilities (such as certain government buildings), verifying the information on the credential by comparing it to information on a network would increase the reliability of the credential. And while we recommend that all states adopt similar standards, there would still be room for variations among the licenses—for example, in the use of a state seal or motto on the license.

Personnel

We recommend that state motor vehicle agencies provide their employees with ongoing, detailed training about how to spot counterfeit or false documents. They should also provide law enforcement personnel with guidelines on checking the validity of driver's licenses.

As noted in a recent GAO report on the use of counterfeit documents to obtain licenses, many DMV officials do not recognize counterfeit documents when they are presented.[42] Periodically, a state could conduct spot checks to see whether officials spot the false documents and whether they follow protocol in those instances. For example, in states that require DMV officials to confiscate documents they believe are counterfeit or false, are officials complying with these guidelines? To better meet these responsibilities, state motor vehicle agencies should launch aggressive oversight, auditing, and anticorruption policies to help prevent fraud and to make it easier to detect fraud in the license-issuing process.

Phase Two

Technology

We need to develop studies to determine whether biometric and cryptographic technologies might be used to make driver's licenses and other forms of identification more reliable. Further research should examine available and new technology and make clear which, if any, is appropriate to improve our means of identification. We should examine the enrollment processes and their implementation, incorporating assumptions

[38] GAO, *Social Security Numbers: Improved SSN Verification and Exchange of States' Driver Records Would Enhance Identity Verification*, Report to Congressional Requesters, September 2003, 1 (GAO-03-920).

[39] Prepared Testimony of Cramer (GAO-03-1147T).

[40] GAO, *Social Security Numbers,* 12 (GAO-03-920).

[41] Ibid.

[42] Prepared Testimony of Cramer (GAO-03-1147T).

about the primary purposes and uses of the particular means of identification.

We believe multiple studies are needed, on two general levels: (1.) meta-analysis, overview, and codification of what is known (the results of various ongoing studies in the private sector and in the government); and (2.) the issuance of RFPs to invite additional studies that would cover well-known lacunae or those lacunae the analysis of the first level—the summaries of the state of the art—would reveal.

Some examples of current technologies are smart cards, two-dimensional bar codes, scanners for network verification, and magnetic strips. Biometric data already exists on driver's licenses, and for years biometric data has been used to link an individual to an identification card. For instance, driver's licenses include a photo and other identifying information, such as height, weight, and eye color. Unfortunately, these biometrics are not the most reliable: Individuals can gain or lose weight, or lie about it, and eye color can easily be changed using contact lenses. The addition of new forms of biometric data on driver's licenses—data that is difficult to change and is specific to the individual—might increase our ability to identify individuals more reliably and accurately, especially when a higher level of security is needed.

Any analysis should address ways to protect privacy and other civil liberties while achieving more reliable means of identification. Recommendations for the collection, storage, and use of biometric data should be addressed, as should the possible unintended consequences of collecting it.

Private sector remedies

We believe the government should explore private sector alternatives to making our means of identification more reliable. We urge DHS officials to convene a panel of representatives from corporations to determine incentives to encourage the private sector to use various purposeful cards (credit cards, medical cards, etc.). These cards could be purchased voluntarily by consumers, could be more reliable and verifiable, and could use photos or biometrics along with other identifying information.

Among the options to be examined is whether various new cards could be used to provide secondary verification of identity. The private sector has shown repeatedly that it can and does create successful means of identification. For instance, many corporations are devising their own purposive means of identification, some of which are low-tech and others high-tech. And some companies will not even allow an employee to enter the premises if he or she has forgotten the company-issued ID, even if the employee can present a driver's license to security officials.[43]

Private sector initiatives have been launched to develop more reliable means of identification, with ATM cards as one example of this. Below we explore issues surrounding the private sector producing a more reliable means of identification, whether companies could make the identification more widely available and acceptable while providing incentives to people for its use. We also examine whether this method might ease some concerns about identification, by proposing new means of identification that is less intrusive, not more, and helping to convince the public that improving identification will increase security.

Although it appears that the private sector is interested in having more reliable means of identification, the question remains: Would "high-security" cards catch on? These would be cards that could be purchased for approximately $65 to $100, from various companies, and with which one could cash checks and pass through building and airport security, among other things. This does presuppose that the government would partner with the private sector, accepting means of identification developed and used by the private sector. Would these cards ease the problems at hand? What incentives might be needed to encourage the private sector to develop high-security cards?

We are suggesting that if private sector cards, obtained on a voluntary basis, could reliably identify individuals, then routine identification (not to be confused with security checks before entering highly secured areas) could become more reliable, with little or no cost to the government. Moreover, the stigma now attached to some identification methods could be reduced, due to the voluntary nature of the purchase. In addition, private sector cards could also be used for nonsecurity purposes. If the private sector card were a smart card and were embedded with a computer chip and encryption technology, ATM and credit card functions could be added to the card as well.

[43] We thank Eric Benhamou, chairman of the board of directors with 3Com Corporation, for this point.

Accountability and privacy protections

We believe that if accountability if found deficient (or excessive), the remedy is to adjust accountability but not to deny a measure altogether.

New measures that are introduced to enhance security and, more generally, to assist in law enforcement are often examined in terms of whether they are of merit as separate and distinct solutions. However, judging the legitimacy, or value, of a public policy measure entails more than establishing whether it significantly enhances public safety, is minimally intrusive, undermines further our already endangered civil rights, or makes it more difficult to deal with other public needs. The legitimacy and value of a policy must also be based on a judgment of those who employ new powers: Are they sufficiently accountable to the various overseers—ultimately, the citizenry? Some powers are inappropriate no matter what oversight is provided. However, for the issue at hand, the main question is whether there is sufficient accountability.

Concerns about privacy should be addressed in all matters regarding more reliable means of identification. We believe that studies of ways to make means of identification more reliable should also include the quest for ways to protect privacy and civil liberties.

As we mentioned earlier, for personal data, such as digitized birth- and death-certificate records, we believe that the owner of the data should have privacy-protection and enforcement measures in place that address access issues. For instance, audit trails should be established that could detect unauthorized use of data and help deter it.

We also recommend that the DHS set up a public-private body to review more reliable means of identification measures to be used for homeland security purposes as they emerge, and also to examine the measures' effectiveness and privacy implications. This body should operate under the criteria specified in the Federal Advisory Committee Act.

Collateral gains

If more reliable means of identification were available for national security purposes, then a great number of other safety and nonsafety issues could be alleviated. Collateral gains would be possible; we examine some of them in this section.

Protecting the innocent

A major example of the miscarriage of justice is the well-established and widely known fact that people are misidentified and jailed for crimes they did not commit. With more reliable means of identification, the incidents should decrease in which innocent people are barred from flying, driving, entering the U.S., and obtaining security-sensitive jobs.

Identity theft and credit card fraud

The Federal Trade Commission (FTC) reported that it received more than 160,000 complaints of identity theft in 2002[44]; and this year alone, the FTC anticipates receiving some 210,000 complaints.[45] These reported complaints are low-end estimates of the prevalence of identity theft. A September 2003 FTC survey estimated that within the past year, more than three million Americans discovered that their personal information had been misused; it also found that the total annual cost to identity-theft victims is about $5 billion.[46] If means of identification were more reliable, then such fraud could be more difficult to commit and easier to detect.

Voter fraud

Identification difficulties can lead to problems with voter fraud. In many states, deceased voters remain on the voting rolls and individuals with false or counterfeit identification can often vote in person or often request absentee ballots. Picture identification is not consistently required. If means of identification were more reliable, then voter fraud could be easier to detect.

Fugitives

While the exact number of felons at large is not available, some estimates have been made: In 2002, the FBI said it

[44] FTC, Identity Theft Data Clearinghouse, "Information on Identity Theft for Consumers and Victims from January 2002 Through December 2002." Available at http://www.consumer.gov/idtheft/reports/CY2002ReportFinal.pdf. Accessed 11 July 2003.

[45] FTC, *Overview of the Identity Theft Program: October 1998–September 2003.* Available at http://www.ftc.gov/os/2003/09/timelinereport.pdf. Accessed 10 September 2003.

[46] FTC, *Identity Theft Survey Report*, prepared by Synovate, September 2003. Available at http://www.ftc.gov/os/2003/09/synovatereport.pdf. Accessed 10 September 2003.

was looking for about 12,000 fugitives at any one time.[47] The lack of reliable means of identification makes it difficult for law enforcement officials to catch fugitives who have skipped court appearances or those with warrants out for their arrest. If a police officer pulls over a speeding driver in Oregon and checks the driver's license, the officer is unable to determine whether there is a warrant out for that person's arrest in another state; there is also no way of telling if the driver is using a false or counterfeit ID. If means of identification were more reliable, law enforcement would better be able to accurately identify the driver. Likewise, more reliable means of identification would help when individuals who are prohibited from driving—due, for example, to several DUI convictions—get behind the wheel of a car.

Employment

Convicted sexual predators often depart the jurisdiction of their offenses only to apply later for jobs at child-care centers or schools elsewhere in the nation. While their names may be compiled in a national network, such a database is useless if the predator has counterfeit or false identification. In much the same way, abusive health-care workers—particularly those caring for the elderly—will often apply for jobs caring for the vulnerable, even after having been previously caught and terminated. Efforts to warn other health-care providers will be more successful with more reliable means of identification.

Other programs

Lack of reliable identification can create great expense for other government programs, such as those for student loans, affordable housing, and food assistance, and can lead to a loss of revenue in terms of individual income tax payments. By using electronic benefits transfers, the government has cut down on fraud in some of these systems; reliable identification can help even more, especially during the enrollment process of these programs.

[47] FBI, "General Frequently Asked Questions." Available at http://www.fbi.gov/aboutus/faqs/faqsone.htm. Accessed 12 September 2003.

Appendix B

A Primer on Homeland Security Players and Information

by Mary DeRosa and James Lewis

Introduction

To make specific recommendations about a network for sharing homeland security information, it is necessary to understand what the information is and the players who collect and use it. This memorandum attempts to provide some basic, practical information about who collects homeland security information, how they collect that information, and who uses it. In Section 1, we will discuss information collection and introduce some key collectors. In Section 2, we will provide examples of some information users and discuss their information needs. When recommending a network for information-sharing, we also have to recognize and address the dangers of disclosure of certain types of information. Section 3 of this primer will therefore explain some of the policies and values behind protecting information from disclosure.

Section 1: Information collectors

In this primer we discuss information in four categories: (1.) information collected for federal law enforcement; (2.) intelligence; (3.) information collected by federal agencies in the course of their duties (other than law enforcement and intelligence); and (4.) information from state and local police and government agencies. We will not discuss information collected by the private sector, which also can be crucial to developing terrorism warnings.

Law enforcement information

Law enforcement information is information collected to investigate, solve, and prosecute crimes. Law enforcement is primarily reactive. That is, although sometimes law enforcement operations prevent crimes, usually they solve crimes after they occur. Federal law enforcement officers investigate crimes and work with the Department of Justice (DOJ), including U.S. Attorneys' offices, to indict and prosecute criminals. In the course of investigations and prosecutions of suspected terrorists, law enforcement officials gather a great deal of information about terrorists. For example, from investigations of the 1993 World Trade Center bombing, the 1998 embassy bombings, the attack on the *USS Cole*, and other terrorism investigations over the past decade, the Federal Bureau of Investigation (FBI) collected significant information about Al Qaeda's structure, methods, and membership. Such information is usually recorded in evidence reports, but it can also be in court papers such as indictments.

THE MOST SIGNIFICANT INFORMATION-COLLECTION METHODS USED BY FEDERAL LAW ENFORCEMENT AGENCIES

1. **Forensic/crime scene and other physical evidence**
   Fourth Amendment protections apply to searches and seizures of physical evidence in private places.

2. **Interviews and interrogation**
   Interviews can be of witnesses or suspects. There are well-known constitutional constraints on the questioning of suspects in custody.

3. **Criminal and other public sector databases**
   Agents will refer to databases, such as the National Crime Information Center (NCIC), to check on criminal background and other information about people of interest in an investigation.

4. **Private sector data**
   Sometimes agents will purchase, request, or demand by some legal process (for example, subpoena or warrant) data from the private sector on individuals. This could include credit, financial, travel, communications, or other similar data.

5. **Physical surveillance**
   Physical surveillance in public places can raise First Amendment issues if it chills the exercise of protected speech.

6. **Human sources (HUMINT)**
   These can be paid or volunteer sources who develop relationships with specific agents. There are detailed procedures for their recruitment and use.

7. **Electronic surveillance**
   Wiretaps and most other electronic surveillance for federal law enforcement are conducted pursuant to Title III of the Omnibus Crime Control and Safe

Streets Act of 1968, which requires a judge to find probable cause that a specific crime has been, is being, or will be committed and that the wiretap will obtain communications about that crime.

8. **Undercover (covert) operations**
   These extremely sensitive operations involve law enforcement personnel infiltrating criminal groups. They are time-intensive and often very expensive.

Many of these tools and techniques are the same as those used to collect intelligence, which will be discussed below. The differences are in the legal authorities for, and restrictions on, gathering the information; the purpose for collection; and the ultimate use of the information. Law enforcement agents must always be attentive to constitutional protections of the people they investigate. If evidence is collected in a manner that violates a constitutional protection, it can be excluded from use at trial.

To those collecting it, law enforcement information is evidence, which leads to some problems with sharing the information. First, because those collecting the information are focused on solving a particular crime, they sometimes will ignore—or at least fail to record—information that could be relevant to preventing future terrorist attacks but does not relate to that particular crime. One example of this is the case of convicted terrorist Abdul Hakim Murad. Prior to September 11, the FBI learned, as part of a criminal investigation, that Murad had been involved in plots to blow up 12 U.S.–owned airliners over the Pacific Ocean and to crash an aircraft into the Central Intelligence Agency (CIA) headquarters. But information about those plots was not relevant to the crimes with which Murad was charged. Information about those plots did not show up in Murad's indictment or in any other form that would have allowed analysts to assess it in light of other information about terrorist plots. The information, essentially, was lost.

An even greater problem with sharing of law enforcement information is the strong incentive for law enforcement personnel to keep investigations and evidence secret because of a concern about protecting eventual prosecution. The value of protecting the secrecy of ongoing investigations will be discussed in greater depth in Section 3. It is clear, though, that this legitimate concern affects the culture of law enforcement information-gathering generally, and that it leads to hoarding of information that could be shared without harming eventual prosecution.

The Federal Bureau of Investigation (FBI)

The FBI has the broadest law enforcement jurisdiction of any federal law enforcement agency. It has the authority to investigate any federal crime that is not exclusively within the jurisdiction of another agency and is the federal law enforcement agency responsible for investigating terrorist crimes. The FBI also has an intelligence mission, discussed below, which, in the area of counterterrorism, has increased significantly since September 11.

The FBI has 56 field offices in major cities across the country and smaller resident agencies in some smaller locations. Each field office operates with a great deal of autonomy. Agents in field offices initiate and run investigations and operations on their own, although they need to seek authorization for certain activities—such as undercover operations—from headquarters. The primary documentation for field-office criminal investigations is the FD-302 report (an official report of evidence collection—such as a witness interview or report of surveillance—that can be used in court). Traditionally, FD-302 reports are closely held and not shared with other field offices. Field offices also record information from discussions and investigations in less formal memoranda. Since September 11, memoranda containing information that could be related to terrorism are usually forwarded to a local Joint Terrorism Task Force (JTTF) (a team of state and local law enforcement officers, FBI agents, and other federal agents whose purpose is to pool expertise and share information) and the FBI headquarters.

FBI field-office counterterrorism personnel work with JTTFs throughout the country. There are currently 84 JTTFs (an increase from 35 in 2001). JTTFs are headed by a supervisory agent from the local FBI field office, and are, more often than not, located with the FBI field office. Historically, the information-sharing has often been in one direction, with the FBI being reluctant to inform state and local agencies of operations or investigations for fear of interference that could harm those investigations. As a result, JTTF representatives from agencies other than the FBI agree not to share information they receive from the JTTF with their agency unless they receive approval from the JTTF head.

At FBI headquarters in Washington, DC, oversight and direction for counterterrorism criminal investigations come from the Counterterrorism Division. This division is responsible for all counterterrorism matters, whether criminal or intelligence. Supervisory special agents in field offices determine what information to share with

headquarters and report it to the Counterterrorism Division.

The Financial Crimes Enforcement Network (FinCEN)

The Financial Crimes Enforcement Network (FinCEN) is a Treasury Department agency. It was established in 1990 to administer the Bank Secrecy Act (BSA), support law enforcement agencies, and analyze information from banks and other sources. Banks and other financial institutions provide FinCEN with information on financial transactions. The BSA's record-keeping and reporting requirements create a financial trail for investigators to track terrorist activities and assets, and FinCEN's data-collection authorities have been expanded by a number of laws aimed at money-laundering, the most recent being the USA PATRIOT Act. FinCEN has approximately 200 employees, most of whom are analysts. FinCEN also has 30 to 40 long-term detailees from different law enforcement and regulatory agencies.

FinCEN emphasizes the use of network and information-processing technologies. The agency uses data extraction, data mining, and analytical software tools on the data it receives under the BSA. It uses data from the Suspicious Activity Report system (also known as SARs) in combination with other intelligence, law enforcement, or commercial information to identify trends and patterns in money-laundering and BSA data.

FinCEN defines itself as a network of law enforcement, financial, and regulatory agencies on the international, federal, state, and local level. It links law enforcement agencies and financial institutions to allow them to share information on suspicious financial transactions. The Hawala system of informal money transfers that is widely used in Pakistan and the Persian Gulf poses a challenge for FinCEN, which relies primarily on information received from banks and other financial institutions.

Intelligence

The purpose of intelligence is to provide warning, help assess threats and vulnerabilities, identify policy opportunities, and assist policymakers in national security decision-making. Unlike information collected for law enforcement, the purpose of intelligence collection is to prevent harm. Because of the potentially devastating effects of a terrorist attack, counterterrorism is seen increasingly as more of an intelligence challenge than a law enforcement challenge. The tools and techniques for collecting intelligence are similar to those used for law enforcement, but the authorities are different. Intelligence collected abroad on foreign persons does not raise Fourth Amendment search-and-seizure issues. Intelligence collected on U.S. persons or within the U.S. however, does raise some of these constitutional issues. But when the purpose of the collection is for national security, courts have allowed greater flexibility for intelligence collection than for law enforcement, particularly when the threat can be shown to be a foreign power.

The head of the U.S. intelligence community is the Director of Central Intelligence (DCI). The DCI is responsible for coordination and policy direction for the entire intelligence community, which includes entities within the Department of Defense (DoD) and several other Executive Branch departments. The DCI has direct authority for the programs, staff, and budget of the CIA. As mentioned above, intelligence collection uses most of the same methods as law enforcement.

THE MOST SIGNIFICANT METHODS OF INTELLIGENCE COLLECTION

1. **Human sources (HUMINT)**
   Many post–September 11 analyses have noted the weak collection capabilities for human intelligence on non-traditional threats such as terrorism and weapons of mass destruction.

2. **Imagery**
   This is primarily satellite imagery, but also includes imagery from manned and unmanned aircraft and other sources.

3. **Electronic surveillance**
   This includes intercepts of telephone and other electronic communications. The authority for electronic surveillance conducted in the U.S. is the Foreign Intelligence Surveillance Act (FISA). If surveillance involves a U.S. person, the FBI conducts it. The FISA requires the government to obtain a secret court order from a special court, the Foreign Intelligence Surveillance Court (FISC). The government must show probable cause that the target is, or is an agent of, a foreign power. No such authorities are required for surveillance originating or occurring outside the U.S.

4. **Interviews and interrogation**
   Information obtained in this manner normally is disseminated as HUMINT reports. Here the person conducting the interview is key: If he is unaware of important pieces of missing data in the terrorism picture, he may fail to ask a relevant question, or may fail to record a piece of valuable information.

5. **Seized materials**
   Items seized or turned over to intelligence agencies, such as computers, records, equipment, or maps, must be "exploited," or analyzed, by technically competent persons who are also aware of the analytic picture. This effort takes a long time to complete; but shortcuts can result in conclusions that are unreliable.

6. **Covert action**
   These are activities that are not primarily for intelligence collection, although they often produce intelligence. They are extremely sensitive operations directed by the President and designed to influence political, economic, or military conditions abroad, where it is intended that the U.S. role will not be acknowledged publicly.

The information collected from these sources is called "raw intelligence." Raw intelligence must be combined with other intelligence and analyzed to get a sense of its credibility, reliability, and significance. The results of this analytical process are called "finished intelligence." Our intelligence structure gives the intelligence collectors ownership of the information they collect, and collectors protect raw intelligence jealously. Indeed, the national security classification system allows the originator of a piece of intelligence to place the designation "Originator Controlled," or "ORCON," on a piece of intelligence. This means that the intelligence cannot be distributed further without the originator's approval. This insistence on control is due in part to the fear that without such control the information will be leaked or inadvertently released and a critical source or method will be compromised. This concern is discussed in greater length in Section 3. At least as important, controlling information is often seen as a way to preserve bureaucratic power.

When raw intelligence is controlled in this way, the real loser is intelligence analysis. Each intelligence organization has, to a greater or lesser degree, its own analysts. These agencies, in the past, have preferred to have only their own analysts see their raw intelligence. As a result, there were many analysts with parts of the story, but little real all-source analysis. Since September 11, the intelligence community has recognized this problem, and there have been some improvements. The Terrorist Threat Integration Center (TTIC), discussed below, is designed, in part, to address this problem.

Finished analytical products are distributed more freely than raw intelligence. Many reports are circulated routinely among groups of cleared policymakers and other officials. Other more sensitive products—such as anything about a covert action, or intelligence that would reveal a particularly sensitive source—are never distributed in electronic form and are kept within a tight circle of cleared officials.

Sometimes intelligence from a sensitive source is "sanitized." That is, less-sensitive material is extracted so that a broader audience can view the remainder. The sanitized version of intelligence can sometimes have a lower classification (for example, "Secret" rather than "Top Secret"), or it can even be unclassified. Sometimes this is done on a paper report with a tear line. Below the tear line is sensitive information that would reveal the source; above the line is data extracted from the report that is less sensitive. These paper reports are actually torn apart, and the top portion is distributed more broadly. Often, however, policymakers and other officials find the sanitized data on these and other reports to have limited usefulness because it lacks context or key information.

The Central Intelligence Agency (CIA)

The CIA is responsible for collecting foreign intelligence, primarily outside of the U.S., through human sources and other means; for analyzing and disseminating that intelligence; for conducting and coordinating counterintelligence activities outside of the U.S.; and for conducting covert actions approved by the President outside of the U.S. CIA offices relevant to homeland security are the Directorate of Operations (DO), the Directorate of Intelligence (DI), and the DCI Counterterrorist Center (CTC).

The DO is the service responsible for gathering human-source intelligence around the world. It does this primarily by recruiting HUMINT sources and by collaborating with host-country intelligence services and police services. The DO is also the CIA directorate responsible for overseas covert action. DO sources and operations are among the most sensitive information in the intelligence community, and the DO is notoriously reluctant to share information—even within the CIA. Information comes directly to the DO headquarters from field offices, and DO personnel prepare a report about that information. Raw products that would identify a human source never leave the DO, and typically only the most senior CIA analysts see the DO report. To the extent information about human sources and about covert actions is disseminated, it is done only on paper, not electronically.

The DI is the CIA analysis office. Analysts from the DI gather information from the CIA and other sources and conduct strategic analysis. The mission of the office is to provide timely and objective assessments to senior U.S.

policymakers in the form of finished intelligence products, including written reports and oral briefings.

DCI William Casey created the CTC in the late 1980s after a series of high-profile attacks by international terrorists. The CTC reports to the DCI and, technically, is not part of the CIA bureaucracy, although it is housed at, and is supported administratively by, the CIA. The CTC's mission is to assist the DCI in coordinating the counterterrorism efforts of the intelligence community by coordinating and conducting counterterrorist operations and exploiting all-source intelligence in order to produce in-depth analyses of terrorist groups, methods, and plans. Since 1996, the CTC and the FBI's counterterrorism directorate have been exchanging senior-level officers, although before September 11, this collaboration did not always result in successful information-sharing between the two entities. One criticism of the CTC has been that it has operated mostly with the DO and has emphasized operations over collection and analysis.

The National Security Agency (NSA)

The NSA collects signals and communications intelligence on foreign targets of concern to the U.S. The NSA collects an immense amount of traffic, and one of its key daily tasks is to reduce millions of intercepts down to a few thousand for analysts to review. Computers do this filtering using specialized software. Linguists and analysts with area or subject expertise then review the much smaller set of filtered intercepts to determine their importance. At the end of this daily process, a small number of intercepts is found to be useful.

The NSA prepares processed reports, some of which are available in the routine traffic circulated among agencies. Other, more sensitive reports are closely held and handled in special dissemination channels. On rare occasions, the NSA will also provide raw traffic (for example, translated text of actual intercepts) to senior policymakers. Intelligence analysts at other agencies rely on input from the NSA in developing their own analyses, and the NSA can be tasked by agencies to collect intelligence on specific problems or to search databases. The NSA has finite collection and analytical resources, so high-priority assignments can bump long-term or less-important collection projects. Signals and communications intercepts provide very valuable intelligence, but sophisticated targets like Al Qaeda use a variety of techniques to evade interception. NSA material is usually highly classified, not only because of the sensitivity of the material, but also because of the sensitivity of the collection techniques. Currently, signals and communications intelligence is one of the most important sources of information that the Department of Homeland Security (DHS) uses to issue alerts, but the actual intelligence upon which the alert is based is not shared with local authorities.

The Federal Bureau of Investigation (FBI)

The FBI is the agency responsible for collecting intelligence on terrorists in the U.S.; it is the only U.S. domestic-intelligence agency. U.S. policy and regulation restrict foreign-intelligence agencies from collecting intelligence on U.S. persons. The FBI collects intelligence related to foreign threats, such as international terrorism, pursuant to FISA and the "Attorney General's Guidelines for FBI National Security Investigations and Foreign Intelligence Collection." (These guidelines are largely classified.)

As with law enforcement collection, the FBI organizes its intelligence collection by cases or investigations called "foreign counterintelligence," or "FCI," investigations. For the most part, field agents do not specialize in intelligence collection. An agent in a field office can, at any time, be conducting a criminal investigation of terrorism or an FCI terrorism investigation. Important intelligence gathered in field offices is shared with FBI headquarters. Headquarters officials make decisions about sharing intelligence with other intelligence agencies and policymakers.

A number of institutional issues has made the FBI historically ineffective as an intelligence agency. Most important, the FBI is fundamentally a law enforcement agency. Its culture is that of a law enforcement agency, and the system rewards success in law enforcement such as arrests, prosecutions, and convictions. The disciplines of law enforcement and intelligence differ in critical ways, and FBI special agents primarily are taught the law enforcement view of how and why information is collected. Senator Shelby, in his "Additional Views" to the Joint Congressional Investigation of September 11, referred to the "tyranny of the casefile." He meant by this that FBI agents are trained to think in terms of a case, which causes them to focus on discrete individuals or organizations. Information about an individual believed to be in Hezbollah, for example, could be viewed as part of the Hezbollah case and would not necessarily be considered as part of an investigation of Al Qaeda. Thus, agents or analysts become experts on one group, but correlations, trends, and patterns involving both can be lost.

FBI agents are also unfamiliar with being a tool for policymakers or other national security decision-makers. They are simply not accustomed to—and in fact their culture discourages—a focus on a customer other than the prosecutor. Finally, the FBI has not traditionally valued, rewarded, or even understood analysis, which is critical to intelligence.

Since September 11, the FBI has recognized many of these deficiencies and has made significant changes to address them. For example, it has greatly expanded its office of analysis and has enhanced analyst training. There is now an analysis branch in the Counterterrorism Division at headquarters, which focuses on strategic assessments and reports to policymakers. The FBI has also established the position of reports officer. The reports officer's job is to extract relevant information from FBI criminal and FCI investigations, turn it into Intelligence Information Reports (IIRs), and disseminate it as widely as possible. The FBI is hiring reports officers who will be assigned to field offices to support local law enforcement and intelligence community needs. Perhaps the most significant new development is the FBI's elevation of intelligence in its management structure. The FBI recently created and filled the new position of Executive Assistant Director for Intelligence at FBI headquarters. It has also appointed Assistant Special Agents in Charge (ASACs) of intelligence in each field office, and is creating separate intelligence units in all field offices.

Despite these steps, some policymakers and experts believe that the FBI's mix of law enforcement and intelligence functions is inherently ineffective. They advocate creating a separate domestic intelligence agency—similar to the U.K.'s Security Service (MI-5)—that would be responsible for collecting and analyzing domestic intelligence.

The Terrorist Threat Integration Center (TTIC)

The newly created TTIC is intended to be a center for fusion and analysis of terrorist-threat intelligence information from all sources, domestic and foreign. President Bush announced the plan to create the TTIC during his 2003 State of the Union address, and its doors opened in May 2003. The TTIC's director is a CIA official who reports to the DCI, but it is a joint venture that includes personnel from the CIA, the FBI, the DHS, and several other entities of the intelligence community. It is currently housed in the CIA complex. According to the White House announcement and testimony by administration officials, TTIC personnel have unfettered access to raw and finished intelligence about terrorist threats. The TTIC does not collect intelligence.

The TTIC's mission is to integrate and disseminate terrorist threat–related information and analysis. Its analytical staff—which consists primarily of junior analysts—includes about 100 members (as of July 2003), but that number is expected to increase significantly over the next year. The TTIC's analytical focus is on preparing two daily reports: the President's Terrorism Threat Report (PTTR) and the Terrorism Threat Matrix (TTM). The PTTR is a highly sensitive analysis for the President of the daily threat information. The TTM is a compilation, without analysis, of the terrorist-threat information received in the previous 24 hours; it is distributed to senior officials in all federal government intelligence agencies with a homeland security mission.

To assist TTIC in its information-dissemination responsibilities, the DCI, the Attorney General, and Secretary of the DHS signed, in March 2003, the Memorandum of Understanding on Homeland Security Information Sharing, which commits all agencies participating in TTIC to take steps—such as minimizing use of originator controls and producing sanitized versions of intelligence—to increase intelligence-sharing. In practice, it is not yet clear that this agreement has had a significant effect. For example, TTIC analysts may not disseminate information they receive without originator permission. Moreover, most analysts must keep an array of computer terminals under their desks in order to access information from different U.S. government sources and cannot perform one search against multiple-agency databases simultaneously.

One significant information-sharing advance the TTIC has implemented is the TTIC Online website. This website hosts TTIC analysis and links to other counterterrorism reports. It reaches analysts with the appropriate clearances at all major departments and agencies with a homeland security mission, including JTTFs around the country. Currently, TTIC Online contains information at the Top Secret/SCI level. The website is, therefore, available only to people with the highest clearances and in the most secure environments. However, the TTIC plans to replicate TTIC Online on less-sensitive networks, to provide less-sensitive information and analysis to a broader community of analysts and other consumers.

Because it is in its infancy, there are still many questions about the TTIC's role and functions. It is not clear, for example, how great a role FBI personnel will actually play in the TTIC, although the intention is that it will be significant. It also remains to be seen how TTIC personnel will interact with intelligence collectors to set collection priorities. Nor is it clear how much information the TTIC will receive from the DHS or other non–intelligence agencies that collect information, from state and local governments, or from the private sector.

Another significant question is how effectively the TTIC will disseminate intelligence to all players responsible for preventing or responding to terrorist attacks. It is sure to provide information to the DHS and the FBI. Less certain is whether the TTIC will have any direct relationship with state, local, or private sector entities.

The Information Analysis and Infrastructure Protection Directorate (IA&IP) of the Department of Homeland Security (DHS)

The Homeland Security Act established the IA&IP in the DHS, headed by an Under Secretary, with an Assistant Secretary for information analysis. The legislation envisions an intelligence entity that would receive and analyze information from within the DHS and from law enforcement, intelligence, state, local, and private sector entities. It would analyze that information and use it to do the following:

1. Assess the nature and scope of threats and potential vulnerabilities.
2. Perform risk assessments.
3. Identify priorities for protection and support measures.
4. Develop a national plan for securing key resources and critical infrastructure and recommend measures to protect them.
5. Provide warnings of terrorist attacks.
6. Disseminate information within the DHS and to other federal, state, local, and private sector entities responsible for homeland security to assist in prevention, and response to, terrorism.

The statute is explicit that, except as otherwise directed by the President, the DHS is to have access from any federal agency to all information and intelligence—including raw intelligence—about terrorist threats and vulnerabilities of the U.S. to terrorism. The directorate does not have authority to collect intelligence.

When the legislation was passed, many assumed this office would be responsible for all-source fusion and analysis of intelligence for homeland security. With the creation of the TTIC, it is unclear how much the DHS entity will conduct its own analysis and how much it will rely on the TTIC. The directorate will almost certainly duplicate the TTIC's functions to some degree.

Other federal agencies

A significant amount of the information collected by the federal government that is relevant to homeland security comes from agencies whose primary function is not intelligence collection or law enforcement. Most of these agencies are now in the DHS, but some very significant ones are in other departments. These agencies collect the information they need to carry out their primary function (immigration or border control, tracking infectious diseases, collecting taxes, issuing visas, etc.). The information collected in the process is often records of applications or transactions (visa or immigration information, shipping manifests, etc.). It can also be reports of diseases in people or agriculture, or information necessary for government programs (tax or social security records). Most of this information is not classified. However, accessing some of it, such as IRS records, raises significant privacy concerns.

The Bureau of Immigration and Customs Enforcement (BICE) of the Department of Homeland Security (DHS)

The BICE at the DHS is the enforcement arm of the Border and Transportation Security Directorate (BTS) (the operational directorate within the DHS responsible for securing the nation's borders and transportation infrastructure). The BICE combines the enforcement functions of several former border and security agencies, including the Immigration and Naturalization Service (INS) and the United States Customs Service, and focuses on enforcement of immigration and customs laws.

In the course of its enforcement work, the BICE collects significant, valuable information about terrorists and their organizations, drug and contraband smuggling, human trafficking, illicit trading of weapons of mass destruction, money-laundering and financial crimes, threats to government facilities, and other matters relevant to homeland security. The BICE has its own office of intelligence, which collects and analyzes this information and shares it with the DHS's IA&IP.

The BICE also has a variety of databases with information on immigrants and visitors to the U.S., which can assist law enforcement and intelligence agencies in fighting terrorism. These include the Student and Exchange Visitor Information System (SEVIS), which manages and maintains data about foreign students and exchange visitors; the National Security Entry-Exit Registration System (NSEERS), which contains detailed registration information about foreign visitors of elevated national security risk—primarily nationals of certain high-risk countries; and the United States Visitor and Immigration Status Indication Technology (US VISIT) system, a new system that will manage data, including biometric identifiers and entry, exit, and status information, on all visitors to the U.S.

The BICE's Law Enforcement Support Center (LESC) is a national enforcement-operations center located in Vermont. Its purpose is to share information with federal, state, and local law enforcement agencies about the immigration status of aliens suspected of, arrested for, or convicted of criminal activity. The LESC gathers information from eight DHS databases, including SEVIS, NSEERS, US VISIT, and other former INS, Customs Service, or Federal Protective Service databases. It also has access to several national and state criminal-information databases.

The Department of Health and Human Services, Centers for Disease Control and Prevention (CDC)

The CDC is the lead federal agency for preventing disease. Its primary function is to provide useful information to enhance health decisions. The CDC carries out its duties primarily by interacting with state and local health providers. The CDC has more than 100 health-surveillance programs nationwide, most of which track specific diseases or trends in clusters of diseases, such as food-borne illnesses and hospital infections. It is developing a larger network-based system to monitor and communicate information about outbreaks of disease, including biological attacks. The CDC's National Electronic Disease Surveillance System (NEDSS) is an initiative to create information-system and data standards for integrated and interoperable surveillance systems at federal, state, and local levels. At this time, many state and local health agencies use different data formats or even depend on paper and fax machines, complicating any effort to develop a national health-monitoring system. As the NEDSS progresses, its purpose will be to improve the ability to identify and track emerging infectious diseases and potential bioterrorism attacks. The NEDSS will put local and state public-health, clinical, and laboratory data into a larger national monitoring network. The CDC's work in this area predated September 11, but has increased in intensity recently.

State and local government agencies

State and local government entities play a critical role in collecting homeland security information. Terrorists live in, and plan attacks throughout, the country. States and localities often have information that is a piece of a puzzle about terrorist activities. One place these clues can be found is in state databases that contain DMV or other license records, records of arrests, or court records.

More important, state and local personnel cover more ground than the federal government could hope to. The FBI has only 11,400 agents nationally. There are many hundreds of thousands of local police and sheriff's office personnel around the country. If terrorists are casing potential targets or attempting to acquire tools or training to commit terrorist acts, state and local police officers are likely to hear about it first. Also, in the course of their regular law enforcement duties, these officers often uncover activity that could be related to terrorist planning. Police officers and local security officials at ports, airports, rail stations, and on highways are sometimes in the best position to detect the movements of suspicious people and dangerous cargo. The problem is that there is little regular, coordinated sharing of this local information with federal and other officials who are in a position to fit it into a larger context.

A local police report about strangers lurking around a train containing hazardous material, for example, is likely to go no farther than the local precinct. If the report is contained there, the mosaic of a terrorist plan to use that train or those materials for an attack will be harder to recognize. Some states and regions have developed law enforcement or terrorism-related databases with information about criminal or suspicious activity that can be accessed by law enforcement officials in terrorism investigations.

State and local public health and agricultural officials are most likely be the first to see signs of a biological attack. Public health agencies, coroners, medical examiners, pharmacists, and health care providers see particular ailments or symptoms that are associated with such an attack. The challenge is to obtain access to this information in a time period that is useful. Some states have methods of tracking this information. Wisconsin, for example, monitors some

drug disbursements at state pharmacies. (In 2002, the state issued an alert when officials detected greater-than-normal sales of Imodium at Walgreens pharmacies. Fortunately, in that case, the increase was due to a sale on Imodium.[1]) A more sophisticated method, however, is New York City's Department of Health and Mental Hygiene's cutting-edge Syndromic Surveillance System, which analyzes more than 50,000 pieces of information daily, including information about 911 calls, emergency-room visits, pharmacy purchases, and worker absenteeism. The system looks for unusual patterns that can alert officials to the early stages of a disease outbreak.[2] This kind of tracking is still an exception, but it is increasing.

Section 2: Information users

Every player in homeland security is an information user. Indeed, all of the collectors described in the previous section need to use information from other sources to do their jobs well. This section describes only three information users, each with substantial but different information needs.

The Department of Homeland Security (DHS)

The DHS is intended to be the one agency accountable for protecting the U.S. from terrorism. Its mission, according to the statute that created it, is to prevent terrorist attacks, reduce the vulnerability of the U.S. to terrorism, and minimize damage from terrorist attacks in the U.S. If it is to accomplish all of this, the DHS needs virtually all information that exists about threats of terrorism and U.S. vulnerabilities.

To stop potential terrorists from entering the U.S., the Border and Transportation Security Division needs an up-to-date watch list with accurate information about suspected terrorists. The Emergency Preparedness and Response Division needs information from states and localities about local emergency capabilities and plans. The Infrastructure Protection Office requires specific and reliable information from a variety of sources about infrastructure vulnerabilities and specific threats to infrastructure. In fact, each operational entity in the DHS must have significant information beyond what it collects itself to do its job.

In addition, to provide useful threat advisories and warnings to state and local government, the private sector, and the public, the DHS needs specific, accurate, reliable, and timely warning information about terrorist plans. And, because it is the one entity that must see the full picture about terrorism in order to set its policies and priorities, the DHS must also have a steady diet of long-term strategic analysis about terrorist plans, trends, and methods.

Because the DHS has operational responsibility for all of these homeland security functions, it is in the best position to know and direct what intelligence and analysis it needs to do its job. Whatever the respective responsibilities of the DHS Information Analysis Office and the TTIC, the DHS will have to receive a massive and steady stream of every kind of homeland security information. This will have to include the information from other federal agencies and the state and local governments described in Section 1, and from the private sector.

The Department of Defense Northern Command (NORTHCOM)

The U.S. Northern Command, established in October 2002, assumed responsibility for the U.S. military's homeland security activities within the U.S. The Northern Command's headquarters are at Peterson Air Force Base in Colorado Springs. The Northern Command is one of nine combatant commands in the U.S. military. (These regional commands include personnel from all four military services under the command of a single, senior flag officer.) The geographical scope of the Northern Command's responsibility includes the continental U.S., Alaska, Canada, Mexico, parts of the Caribbean, and U.S. coastal waters out to 500 nautical miles. The command's geographic focus on the domestic U.S. is a significant departure for the U.S. military, which has focused on overseas warfare since the Civil War.

The Northern Command is very new, and the precise role it will play in homeland security is not yet clear. The Northern Command's mission is as follows: (1.) to conduct operations to deter, prevent, and defeat threats and aggression aimed at the U.S. within the area of its responsibility; and (2.) to provide military assistance—including consequence-management operations—to civilian authorities.[3] The assistance mission—supporting civilian authorities in responding to, and managing the consequences of, natural and man-made disasters—is not new. The DoD has played a significant support role in security for major domestic events such as the

[1] *Strengthening Federal-State Relationships to Prevent and Respond to Terror: Wisconsin*, Dennis L. Dresang, The Century Foundation, June 1, 2003, http://www.tcf.org/publications/homeland_security/kettlpapers/Dresang.pdf

[2] "An Early Warning System for Diseases in New York," Richard Perez-Pena, *New York Times*, April 4, 2003.

[3] See http://www.northcom.mil.

Olympics and Super Bowls, and after disasters, including September 11. The deterrence, prevention, and defeat role is less clearly defined and still evolving.

In carrying out its missions, particularly its responsibility to deter, prevent, and defeat threats to the U.S., the Northern Command will need significant intelligence, from a range of sources, on terrorist threats to the U.S. One of the principal functions of the Northern Command staff is to anticipate terrorist plots and develop plans for responding to them. This requires intelligence from all sources that is as complete as possible. The Northern Command has created its own Combined Intelligence Fusion Center at its headquarters in Colorado, where analysts and officials from a number of DoD and other agencies review and analyze threat information from foreign and domestic sources.

State and local agencies

State and local governments also have a great need for homeland security information, but in their case the full picture will not always be necessary. These governments need the kinds of information that allow them to protect the people, infrastructure, and property in their communities and to contribute effectively to prevention and response efforts.

State and local police, fire, and emergency officials must have accurate and timely information about threats to their area. If the warning is general or vague, these officials cannot make informed decisions about what to protect. Without specific information about methods the terrorists are using or targets they are interested in, these officials can try to cover everything—but given limited resources, they will most likely end up making a best guess. Although these warnings must be as specific as possible, they rarely will need to contain source-identifying information. State and local officials can and should rely on the federal government to make credibility decisions about intelligence sources.

Similarly, police and security personnel can be much more effective at lending their eyes and ears to prevention of terrorism if they know what to watch for. If they are told to look for terrorists who are lurking at rail yards or looking for hazardous chemicals, they will be more useful than if they are told simply to watch for terrorists in their areas. Again, such warnings will rarely need to contain source-sensitive information. In some cases, when local police departments are participating in counterterrorism law enforcement investigations, there is a greater need for specific information. This has led to problems because only very few of these officials have security clearances. Still, many of these concerns can be addressed with use of sanitized intelligence.

If a biological terrorist attack occurs, local health departments and health care officials will need information to handle it and reduce its impact. Doctors need almost real-time notice about symptoms to look for and how to handle these diseases. Public-health and other state officials need accurate and timely information to make decisions about quarantines and other possible precautions to prevent epidemics.

One issue that state and local government entities face in getting information from the federal government is what some refer to as the Gray Davis problem.[4] Federal government players fear that if they provide local officials with more information, that information will be revealed or misused for political reasons, sometimes to the detriment of investigations and public safety.

Section 3: Reasons to protect information

Protecting information that could harm national security if disclosed

Maybe the greatest challenge for an effective homeland security information network is to find a way to share information that is currently restricted because of national security classification. The classification system is designed to protect certain military, foreign policy, and intelligence information that, if disclosed, could harm national security. The U.S. government seeks to protect this information by, first, having an official identify it and, second, ensuring that the information identified is shared only with personnel who have a need to know it to perform their duties and are cleared to see it by a personnel-security process. The current classification system starts with three levels of classification: "Confidential," "Secret," and "Top Secret." These levels are associated with the degree of damage to national security that would result if the information were revealed. On top of these levels are a number of other

[4] The reference is to Governor Gray Davis of California's public announcement, soon after September 11, that there were threats to the Golden Gate and other California bridges. The announcement was based on what federal officials believed to be uncorroborated and unreliable intelligence.

protections, such as Special Access Programs (SAPs) in the DoD and the Department of Energy, and Sensitive Compartmented Information (SCI) programs in the foreign intelligence agencies. These programs set up smaller, more tightly controlled lists of people who are cleared for access to certain kinds of information.

The current system of security classification is cumbersome, often misapplied, and significantly overused. Serious questions remain about the process for making initial classification decisions and about oversight of those decisions, despite some reforms in the 1990s that were based on recommendations of high-level commissions that studied the system. At the same time, the concept of "need to know" is eroding because of the increased automation of information and the ease with which it is distributed. Indeed, because terrorist networks are diverse and constantly adapting, addressing the terrorist threat requires a wide-ranging, fluid information-sharing process. This is, in some ways, incompatible with the concept of "need to know." In short, one can never really know who "needs to know" certain information.

There is no question, though, that some types of information, if disclosed, would damage national security. Despite all of the flaws of the current classification system, there is great value in what it attempts to do, which is to protect this information from disclosure. There are several categories of information that would cause damage if disclosed. They have varying degrees of relevance to a homeland security information network. Some of the categories are as follows:

1. The conduct of effective diplomacy often requires that U.S. positions on negotiations or diplomatic efforts—or sometimes even the fact of those diplomatic efforts—remain secret.

2. Technical information about the design of certain systems—such as weapons, cryptologic, and imagery systems—if revealed, can provide adversaries with the ability to avoid, counteract, or recreate these systems.

3. Revealing the sources and methods used to collect and process intelligence—from signals, imagery, people, or other sources—can compromise the usefulness of those sources and methods because adversaries can learn how to avoid them. If this happens, U.S. intelligence is damaged until an alternate source can be developed. Sometimes, the result is that very expensive collection systems are suddenly stripped of their operational value. Osama bin Laden's realization that the U.S. could intercept some satellite telephone conversations, for example, led him to stop using that communications channel except as a means to confuse and misinform U.S. intelligence.

4. Plans for the conduct of military operations, or the existence of ongoing sensitive intelligence operations, if exposed, not only will compromise those operations, but could endanger lives and cause serious damage to U.S. foreign policy.

5. Protecting the names and other identifying information about individuals who have provided information to the U.S. with the expectation that it will be held in confidence is critical. Revealing these identities can put the source and his or her family at substantial risk. In addition, the loss of sources can impede the ability of U.S. agents to collect human-source information in the future because the U.S. will not be able to assure potential sources that their identities will be protected.

To build a homeland security network that includes the maximum amount of relevant information will require demonstrating to a national security community—whose culture strongly emphasizes secrecy—that these critical categories of information can be protected. Some distribution restrictions for particularly sensitive information are inevitable. The CIA's DO, for example, will fight to the death putting the CIA's most sensitive information on a network. To keep this compartmentalization to a minimum will require cultural changes. In particular, far greater emphasis is needed on training initial classifiers not to overclassify and to focus as much attention on effective sanitization of the intelligence as on classification. That is, they must learn how to create a report that does not include the truly sensitive information (but contains enough information to be useful to others using the network), so that it can be distributed more widely.

Protecting privacy

Americans traditionally have resisted allowing the federal government to access their private information. They fear, with some historical support, that greater government access to private information will lead to abuse. Although the free flow of information to the government and between government entities is critical to fighting terror-

ism, greater access by government personnel to private information about U.S. citizens' activities can create an atmosphere in which abuse of rights is easier and, therefore, more likely.

After significant abuses (by the FBI, the CIA, and military intelligence agencies, among others) in the Vietnam and Watergate eras were revealed in the early 1970s, the federal government instituted a number of reforms designed to control government behavior by restricting government collection, sharing, and use of private information on U.S. persons. Some of these restrictions were as follows:

1. The number of intelligence agencies permitted to collect information on U.S. persons was restricted. With a few exceptions, the FBI was the only agency given this role. Foreign intelligence agencies generally were prohibited, by a combination of law and Executive Branch policy, from such collection.

2. A wall was erected between law enforcement and intelligence collection. The constitutional protections provided to subjects of law enforcement collection are greater than with intelligence collection, which involves national security. To be sure that law enforcement officials did not use the less-rigorous standards for intelligence collection simply to make their job easier, there were restrictions—particularly with electronic surveillance—on use of intelligence tools or products for law enforcement.

3. The FBI was restricted by DOJ policy from collecting publicly available information simply for leads or in order to create dossiers on U.S. citizens. The FBI was required to allege some tie to a crime before it could conduct surveillance in public places, surf the Internet, or access publicly available commercial databases.

Since September 11, many of these restrictions have been relaxed, either by changes to law or policy. For example, although the FBI remains the only agency authorized to collect intelligence on U.S. persons, significantly more of that intelligence is now shared with foreign intelligence agencies. The TTIC, which is now responsible for fusing and analyzing domestic and foreign intelligence on terrorism, is under the authority of the DCI and is housed at the CIA. In addition, the USA PATRIOT Act and changes to DOJ policy allow intelligence information and tools to be used more freely by law enforcement personnel, and DOJ guidelines now permit the FBI to conduct surveillance in public places or perform Google searches, for example, without alleging criminal activity.

Relaxation of these restrictions was, for the most part, inevitable and necessary, given the importance of the free flow of information to the fight against terrorism. The challenge, though, is that there are now significantly fewer institutional protections against government misuse of private information. At the same time, advances in technology have improved immeasurably the government's ability to collect and use private information. Therefore, in designing a network that would promote free flow of information to any number of users, there must be new mechanisms for protecting private information. Technological protections that would, for example, keep private information out of the hands of officials who don't need it, and keep tabs on those who do, can play a significant role in privacy protection. New guidelines and oversight to control the behavior of officials who do have access are just as important.

Protecting the ability to arrest and successfully prosecute terrorists

Federal law enforcement officials guard information about ongoing investigations jealously, which can sometimes hamper other efforts to fight or respond to terrorism. For example, FBI officials are reluctant to share information with local officials about investigations in their region, which sometimes leaves those officials in the dark about local threats. (Health and other officials have said that FBI officials investigating the 2001 anthrax attacks handled information in a way that set back efforts to alleviate the threat to public health and safety.) Also, in the past, the FBI has resisted informing even senior national security policymakers or intelligence officials about information that it uncovers as part of an ongoing terrorism investigation.

Although some of this reluctance to share can be attributed to FBI culture and the agency's unfamiliarity with other disciplines, there are also legitimate concerns about sharing information on ongoing investigations. These investigations often are intricate and have developed over long periods of time and at great expense. If the circle of people who know about an investigation expands to include local officials, there is a risk that, intentionally or inadvertently, those officials will act on the information. Actions by local officials, such as conducting surveillance or arresting or detaining suspects in a federal investigation, could alert terrorists to the investigation.

The example of the anthrax attack demonstrates a difficult problem with counterterrorism, which is both a law enforcement and a public safety challenge. To obtain a conviction at trial, prosecutors must be able to demonstrate that evidence is what they say it is. To do this, physical evidence, crime scenes, and witnesses must be handled very carefully. Involvement with evidence by officials not involved in the investigation threatens a prosecution.

There are also legal issues with sharing some law enforcement information. Federal Rule of Criminal Procedure 6(e) prohibits law enforcement and prosecutorial officials from revealing information collected during a grand jury proceeding. The DOJ and the FBI have at times taken an overly broad view of what constitutes grand jury information. In addition, the USA PATRIOT Act clarified that Rule 6(e) does not restrict the sharing of grand jury information with federal intelligence agencies. Nonetheless, the restriction does exist, and law enforcement officials understand that to violate it could damage an eventual prosecution.

When it comes to sharing information with senior policymakers, law enforcement officials have an additional concern about protecting criminal investigations from inappropriate political influence. The reality or perception of such influence can affect the credibility and legitimacy of an eventual prosecution.

Appendix C

The Immune-System Model

by Tara Lemmey

Background

In our initial report, we stated the following: "To create a national infrastructure that is aware, robust, and resilient to the many challenges we face in the 21st century, we have to harness the power and dynamism of information technology by utilizing the strengths and mitigating the weaknesses of our networked society" (p. 11). We also identified 11 key principles for building this kind of infrastructure. Those principles included empowering local participants, creating network-aware scenarios, facilitating a connected culture, and ensuring safeguards and guidelines for protecting civil liberties. In order to achieve a dynamic infrastructure, we need to consider viable models of implementation and reasonable means for deploying these models across all of the various players in the network.

Some of the criteria we considered while looking at the models were as follows: (1.) scalability to the national level; (2.) provision for organic growth and graceful collapse; (3.) ability to take advantage of existing systems and culture; (4.) evolvability of the system based on current state; (5.) assurance that everyday operations benefit from homeland security measures; and (6.) respect for historic safeguards where possible.

The most critical elements are as follows: (1.) time optimization to allow for the most advantageous decision-making and action; (2.) effective use of the entire landscape of resources; and (3.) computational feasibility.

The problem of too much data and conflicting needs

Much of the current conversation centers on the use of data as a panacea. Our daily relationship with the Internet has encouraged the thinking that all things are "findable," meaning that, given all of the information, we should be able to find the threats in the data. The ability to find things using network technology is now simpler. With search technologies like those used by Google, one can locate data points in space and look for explicitly proposed correlations such as "Tom and Jerry and cartoons."

Discovering some patterns in the data is, of course, possible, and one should go ahead with the pursuit by reasonable computational means. But automating the discovery of all implicit correlations in a data set (in order to generate all—and only—the significant correlations) is, in general, intractable. And because automating the discovery of implicit correlations in the data is intractable, generating a complete solution is also intractable.

For example, if we had 10 terms in a data set and we were looking for all significant pair-wise correlations, we would quickly find that we would have to look at 100 possible relationships. For three term correlations, we would have to consider 1,000 possibilities. Given a 1,000,000-term data set and looking for three term correlations, we're looking at something on the order of 10^{18} possible correlations. The sheer volume of data coming from all of the possible sources creates such a high degree of noise and computational complexity that the likelihood of finding useful correlations is nil. On the other hand, after an event has happened, the correlations we'd be looking for would be explicit. There are ways around this combinatorial explosion, which we explore here, but the key is to have an idea of what you want before you start.

In addition, there are a number of issues that will limit the application of pattern search in large-scale databases. For example, all of the data is never going to end up in the same place, and some data will never show up anywhere in such a searchable format. Furthermore, we have already seen congressional distaste for approaches like that of the Department of Defense's Terrorism Information Awareness program, and we can expect that resistance to global data fishing–expeditions will only harden over time. The recommendations of our Task Force, therefore, will have to balance privacy and security concerns in whatever solutions we propose.

Another major issue is the conflicting set of requirements and constraints on the use of data at the various governmental and nongovernmental agencies. As detailed in "A Primer on Homeland Security Players and Information" (Appendix B), although some of the limiting factors can be overcome through policy or culture modifications,

the bulk of these limitations are appropriate to protect privacy, sources, methods, successful prosecutions, military operations, etc. These requirements limit the ability of some data to be shared in raw form, but they should not limit our ability to act on—or add to—the data if the systems are functioning using all available resources.

A biological approach to resilient information systems

We can learn something about how to address the complexity of the threat-identification problem by looking at the human immune system, which has evolved in several distinct phases as it has had to cope with the complexity of deterrence of foreign biological invaders. The hard-won evolutionary adaptations of the immune system are directly relevant to our task. That said, the immune system should serve as inspiration, not as a direct analogy.

Evolutionarily, the immune system has faced the challenge of distinguishing between "self" and "nonself." It is estimated that the immune system must recognize on the order of 10^{16} different kinds of pathogens, while there are only about 10^5 cells that make up our bodies. How does the immune system go about identifying the difference between what should and what should not be present in our bodies?

The immune system discovered a neat trick. In early development, it produces an enormous diversity of lymphocites carrying randomly generated antibodies, enough to recognize on the order of 10^{16} cells, including the cells that should be in the body. Then, it runs all of these lymphocites through the thymus, where all cell types that are supposed to be in the body are represented. Any lymphocite that responds to a cell in the thymus is destroyed. The only lymphocites that make it out of the thymus are those that do not respond to the body's own cells. Thus, the immune system explicitly trains up on cells that are supposed to be there, and treats everything else as a potential invader that needs to be checked.

When we are born, the antibodies produced by the immune system are somewhat sloppy recognizers—they will bind to anything that looks similar to the pathogen they are specifically generated to recognize. Later in life, as cells respond to foreign invaders, they become more and more refined in their responses to the specific invaders that they have encountered, thus fine-tuning their recognition function.

The point of looking at the immune system is to learn what it has to tell us about the tractability of different approaches to threat detection and intervention. Current government policy is to try to determine all of the bad things that could happen, a task which is in principle intractable. To take the lesson from the immune system, we should apply our information-handling resources to the task of explicitly representing the "normal" behavior of systems, filtering that out, and then paying particular attention to anything that is left.

Patterns in the data must be compared to a model to determine whether they are good patterns or bad patterns. The question is simply whether that model will be of the bad or the good patterns. The immune system teaches us that trying to produce an adequate model of the bad is intractable. Therefore, we should build a model of the good, and treat as suspect any event that does not fit that model. This is a far more tractable approach, and one that can rely on the local expertise of every public-safety worker out there in determining what normal behavior means for the systems under their care.

CENTRAL LESSONS FROM THE IMMUNE SYSTEM

1. A central insight from the immune system concerns the tractability of explicitly modeling good versus explicitly modeling bad.

2. There is a critical need for a greater understanding of "self" (the "normal" behavior of the systems under one's care) by all players at the federal, state, local, and private sector levels. Some surveillance systems are already based on this tenet of characterizing "self," though perhaps not intentionally. Credit-scoring and financial-systems models are examples of such an approach. Applying ourselves to representing the normal behavior of our systems is a specific and accomplishable task we can undertake now.

3. No two immune systems are identical. A population consists of a diverse set of representations of both "self" and "nonself." This implies that a collective homeland immune system should benefit enormously from its large population of local experts, who create diversity in the analyses and perspectives brought to bear on the problem of threat detection and attack prevention. This makes the case for distributed analysis—including analysis at the local level.

4. When the immune system recognizes a foreign pathogen, it produces a great many variants on the

pattern and circulates them so that anything similar will be flagged for attention. Circulating variants of a detected threat, or a generalized threat schema based on the variants, can allow people serving as low-level sensors to become more sophisticated in their signal-seeking.

5. The health sciences have learned that, because the immune system is so elegant, one of the most productive ways to improve health protection is to help the immune system to do its job more effectively. Vaccinations, antitoxins, and other immune-boosting response mechanisms improve the system's efficiency. We should consider methods of tuning up the systems that we already have in place and of training our sensors to be far more responsive to signals and triggers.

6. Scenario-based training helps. Vaccination makes use of the immune response, which boosts the immune system's ability to recognize a potentially lethal threat. It does this by presenting that threat in a nonlethal form.

7. "Self," or "normal operation," can and should have a broad definition. A good deal of what might be considered "abnormal" is not necessarily bad. The context is critical and best supplied by the most local sensor.

8. The immune system strives to achieve a delicate balance between under- and overprotection: If it is too aggressive in attacking entities, it risks attacking things that are supposed to be there, leading to autoimmunity diseases; if the immune system is too tolerant, it will fail to protect the body against potentially dangerous pathogens. Thus, a challenge is to use the extended network to approach the homeland security problem with sufficient aggressiveness, while maintaining proper respect for privacy and other core civil liberties: In the process of protecting against terrorist threats, we must not produce a system that results in a form of social autoimmunity.

9. The primary "success" of HIV/AIDS lies in the virus's ability to attack and disable the immune system itself, thus dismantling the system that recognizes foreign invaders. In the same way, the primary recognizers in our own homeland security system are vulnerable.

10. We must keep in mind that despite all of its complexity, elegance, and sophistication, there is not perfect coverage in the immune system, and some pathogens still manage to get through and cause a great deal of damage.

Internet resources

http://www.howstuffworks.com/immune-system.htm
http://www.niaid.nih.gov/final/immun/immun.htm
http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=11390983
http://www.bbc.co.uk/health/immune/
http://medic.med.uth.tmc.edu/edprog/Immuno/Immune.Works.2003_filesframe.htm#
http://www.cdc.gov/od/nvpo/intro4.htm
http://www.niaid.nih.gov/publications/vaccine/undvacc.htm
http://press2.nci.nih.gov/sciencebehind/immune/immune00.htm
http://uhaweb.hartford.edu/BUGL/immune.htm
http://answers.google.com/answers/main?cmd=threadview&id=218013

Books

Cellular and Molecular Immunology, by Abdul K. Abbas, Jordan S. Pober, and Andrew H. Lichtman
Molecular Biology of the Cell, by Bruce Alberts et al.
Immunobiology: The Immune System in Health and Disease, by Janeway C. A., P. Travers, M. Walport, and M. Shlomchik
How the Immune System Works, by Lauren Sompayrac

Appendix D

Information Vignettes

The following information vignettes describe different types of information that might come into the possession of players in our nominal network. Creating these vignettes using concrete scenarios allowed the Task Force to consider how information should be analyzed and shared to maximize its utility and to optimize the capabilities of the players in the network.

Vignette 1: Information-sharing between and within government agencies

A BIOTERROR THREAT

A source of the FBI's Chicago field office tells his handler that plans are underway to create a national crisis by infecting small numbers of individuals in disparate locations with a virulent virus acquired from sick hogs. The informant says that someone will drive from Chicago to St. Louis, transporting a cooler containing a number of sealed packages, and will hand over the cooler in St. Louis to another operative, who will then drive to an undisclosed location. The source believes the packages could contain the virus. The FBI considers the source to be reliable, but does not believe he could have access to this kind of information.

SECRET

Federal Bureau of Investigation
Chicago Field Office

March 30, 2003

URGENT REPORT

TO: Director Mueller
Deputy Director Gebhart
Executive Assistant Director D'Amuro
Assistant Director Mefford
Section Chief Doe
Unit Chief Bob/Bob

FROM: SAC Johnson/TBJ

RE: Case no. 176543-E

In the course of investigating alleged smuggling operations (electronics, clothing, and CDs) being carried out by a group of local, ethnic Middle Easterners representing themselves as a "mutual assistance group," Special Agent Morrison developed the following information:

According to a sensitive source who has been reliable in giving the FBI timely leads on the smuggling activities undertaken by a number of males of Middle East origin, there is a plan afoot to spread a sickness around the U.S. and create a national crisis. The idea is to infect a number of people in different cities around the country with a virus that terrorist scientists have extracted from sick hogs.

The source then told Mr. Morrison that someone would drive from Chicago to St. Louis with a cooler containing several packages, and would hand the cooler over to someone in St. Louis. That individual would then drive somewhere else and hand the cooler to another operative. The source believed the packages could contain the virus.

The source is placed in the middle of criminal activity related to smuggling. The group with which he is connected appears to be a regular criminal organization with no signs of terrorist connections. Special Agent Morrison does not believe, therefore, that this source would have access to terrorist plans.

Given the headquarters guidance to lean forward on any matters relating to terrorism, however, we are passing this on in case it helps to connect some dots.

[SAC = Special Agent in Charge]

FOR EXERCISE ONLY

TOP SECRET

2335 01070003

CITE: Kabul 11,720
DOI: May 23, 2003
COUNTRY: Afghanistan/U.S.

Station received a call late last night from AFGHANMAN, who asked to meet with RO urgently. RO agreed and proceeded to prearranged rendezvous point.

AFGHANMAN had just come from a meeting of a group associated with Al Qaeda, where he was told by one of the members that terrorist organizations had placed "sleepers" in the U.S. for the purpose of carrying out terrorist attacks. The member claimed he met several of these individuals, all of whom have life-sciences backgrounds and are working in U.S. universities or other facilities.

When AFGHANMAN probed for more details, the interlocutor could not remember specific destinations within the U.S., except for one: He remembered one individual was going to Northwestern University to be a postdoctoral student in microbiology. The source remembered this particular individual because he had shared a meal with him at the terrorist training facility, but he knew him only as "Sadiq."

The source told AFGHANMAN that this particular group of "sleepers" was to undertake operations to sow panic in the U.S. They were told that their job was to scare Americans, rather than to create a spectacular attack such as the one on September 11.

RO reminds headquarters that this information is extremely sensitive and that AFGHANMAN is in extreme danger in relaying this information. RO conveyed to AFGHANMAN the importance of this kind of information to the U.S., and requested that he provide any further information immediately.

[RO = Reporting Officer]

FOR EXERCISE ONLY

TOP SECRET

[RO=Reporting Officer]

DOI: 23 MAY, 2003

COUNTRY: AFGHANISTAN/U.S.

SOURCE: A HIGHLY RELIABLE SOURCE WITH DIRECT ACCESS TO THE INFORMATION

WARNING: THE SOURCE OF THIS INFORMATION IS TAKING A HIGH RISK IN CONVEYING IT TO U.S. OFFICIALS. DISSEMINATION OF THIS REPORT IS LIMITED TO THE RECIPIENTS LISTED HERE.

1. ON MAY 23, 2003, AT APPROXIMATELY 11:45 LOCAL, STATION WAS CONTACTED BY A SOURCE WHO HAS PROVEN TO BE HIGHLY RELIABLE, AND WHO HAS DIRECT ACCESS TO THE INFORMATION BELOW. THE SOURCE DESCRIBED A MEETING THAT HAD TAKEN PLACE THAT NIGHT OF A GROUP OF INDIVIDUALS ASSOCIATED WITH AL QAEDA.

2. ONE OF THE MEMBERS PRESENT TOLD THE SOURCE THAT "SLEEPERS" HAD BEEN PLACED IN THE U.S. FOR THE PURPOSE OF CARRYING OUT TERRORIST ATTACKS. ACCORDING TO THE SOURCE, THIS INDIVIDUAL, WHOM THE SOURCE DID NOT FURTHER IDENTIFY, CLAIMS TO HAVE MET SEVERAL OF THE "SLEEPERS." HE TOLD THE SOURCE THAT THEY ARE ALL WORKING IN UNIVERSITIES AND OTHER FACILITIES IN THE U.S., AND THAT THEY HAVE LIFE-SCIENCES BACKGROUNDS.

3. WHEN THE SOURCE ATTEMPTED TO QUERY THE PERSON FOR MORE INFORMATION, THE PERSON MENTIONED THAT HE HAD MET ONE OF THE "SLEEPERS" AND SAID HE WOULD BE GOING TO NORTHWESTERN UNIVERSITY AND HAD RECEIVED A POSTDOCTORAL DEGREE IN MICROBIOLOGY. THE SOURCE REMEMBERED ONLY THAT THE "SLEEPER'S" NAME WAS "SADIQ."

4. THE SOURCE FUTHER LEARNED THAT THE PURPORTED MISSION OF THESE "SLEEPERS" WAS NOT A LARGE-SCALE EVENT LIKE SEPTEMBER 11, BUT RATHER TO "SCARE AMERICANS."

5. COMMENT: THE SOURCE IS TAKING A PERSONAL RISK IN CONVEYING THIS INFORMATION TO U.S. OFFICIALS. HOWEVER, HE UNDERSTANDS THAT THIS KIND OF INFORMATION IS OF HIGH VALUE TO THE U.S. STATION IS CONFIDENT THAT THE SOURCE WILL CONTINUE TO REPORT IF HE GAINS ACCESS TO RELEVANT INFORMATION.

EXCLUSIVE FOR:

The President
The Vice President
Assistant to the President for National Security Affairs
Assistant to the President for Homeland Security
Secretary of Defense
Secretary of Homeland Security
Director, Terrorist Threat Integration Center

Internal copies (6)

FOR EXERCISE ONLY

How the information would likely be handled today

The FBI electronic communication

Assuming that established procedures are followed, this report would go to the Chicago Joint Terrorism Task Force (JTTF)[1] and to the FBI's headquarters in Washington, DC. There, one of two things would happen: Either the information from the report would be transferred to an Intelligence Information Report (IIR)—a formal intelligence report that FBI headquarters distributes internally and externally, at least to Terrorist Threat Integration Center (TTIC)—or the TTIC might become aware of this information via an informal email from personnel at FBI headquarters. (Given the undeveloped nature of the information in this report, however, and the fact that there is a continuing field investigation, this report might not become an IIR.)

Assuming that the FBI did prepare an IIR, the IIR would be placed on TTIC Online, a top-secret, secure network for counterterrorism information. (TTIC Online is now available to the appropriately cleared individuals in the intelligence community who have access to the network.)[2] The report would then be available to cleared Department of Homeland Security (DHS) personnel, who would pull it off of the TTIC Online system. In addition, if the TTIC produced an analytical product that included the FBI information, that product would go to the DHS (as discussed below). TTIC Online is also available to all JTTFs nationwide that are equipped with Sensitive Compartment Information Facilities (SCIFs)—this is most, if not all of the JTTFs. Therefore, cleared JTTF personnel could have pulled this report off of that system. However, neither the FBI report nor the information it contains would have gone to the Chicago Police Department or to other state or local law enforcement, health, or agricultural agencies around the country. It is important to note that dissemination to JTTFs is not the same as dissemination to the agencies represented on the JTTFs, since the agency representatives agree not to share information with their own agencies without the permission of the FBI.

The CIA report

Before the information contained in this report could be shared outside the Directorate of Operations (DO)—even within the CIA itself—it would have to be sanitized to remove all code words and any information that could help identify the source or place him in a specific setting such as a particular meeting.

A few headquarters personnel would know who AFGHANMAN was. Nonetheless, this information would not be shared with policymakers or, normally, with analysts. The sanitized report, which would still be classified "Top Secret," would contain a sentence describing the reliability of the source and his likely access to the information.

Members of the intelligence community who work on homeland security matters probably would first become aware of this CIA intelligence report through a "gist" published in the daily Terrorism Threat Matrix (TTM). The TTM is a compilation, without analysis, of the terrorist-threat information received within the previous 24 hours, which is distributed to senior officials. This matrix is available to all federal government intelligence agencies with a homeland security mission. Only personnel with "Top Secret/Code Word" clearances may view the TTM. The information in the CIA report would have been discussed at a morning secure video teleconference among designated officials from the homeland security agencies.

The Terrorist Threat Information Center analysis

If all went according to procedures, at this point, analysts in the biological weapons analysis group at the TTIC and/or the Counterterrorist Center (CTC) would probably put the information in the CIA report together with the information in the preceding FBI IIR or email notification. The TTIC might note this in its President's Terrorism Threat Report (PTTR)—the agency's daily analytic report for the President—after receiving permission from the originators of the information (in this case the FBI and the CIA). The TTIC might also inform personnel at the DHS, the CIA, and FBI headquarters of the two pieces of reporting.

1 JTTFs are led by the FBI, and comprise representatives from other federal agencies as well as state and local law enforcement. They are usually headed by the deputy at the local FBI field office.

2 Because TTIC Online contains intelligence at the "Top Secret/Code Word" level, the network access terminals must be located in special Sensitive Compartmented Information Facilities (SCIFs).

Additional sharing needed

In the case of this vignette, the two bits of information would most likely find their way to a common place in the federal government—probably the TTIC, and also the FBI and the CTC—where they could be correlated and analyzed. The most significant failure that this vignette demonstrates is that neither the initial reports nor the analytical product would likely be shared with state and local actors. To make the fullest and most effective use of the information, and to optimize all of the players in the network, some version of the information would need to be shared with state and local entities so that they might serve as additional sensors and collect and contribute additional information. In this scenario, state and local law enforcement should know that coolers could be a vehicle for transporting biological weapons, and local health and agricultural agencies should know to look for signs and symptoms of a hog virus. If any of these agencies came across relevant information, that information could be brought into the network and shared in some fashion with other relevant entities.

The necessary additional output includes a sanitized, unclassified TTIC analysis (any information that might reveal the FBI or CIA source or otherwise impede their investigation and collection efforts would be removed) that would go to the CDC and to regional, state, and local entities responsible for health and agricultural matters, and perhaps also to private sector agricultural entities, probably via the DHS. Also in this case, the TTIC information should flow to state and local law enforcement agencies, most likely from the JTTFs. It is important that the task forces or entities receiving such information have common practices and guidelines for information flow, security, and reporting. In addition, sanitized information should include a marker indicating the name of a person who can be contacted for further information.

In this vignette, it might also be the case that the initial FBI information and/or CIA information should be shared by the DHS with the CDC and other entities, and by the JTTFs with state and local law enforcement, to activate those sensors even earlier, without waiting for the TTIC's analysis of the two pieces of information together. Whether to do so in any particular case requires judgment: It is important not to overload the system of sensors with too much noise (information that might not be important), but also important to make sure the sensors are quickly alerted to signals (credible, actionable information) when they are distinguishable from noise.

If the additional output (at least the information from the TTIC analysis, and possibly the original FBI or CIA information before that) is communicated effectively with the state and local entities and the CDC, they will be sensitized to collect more useful information. This second level of input from these entities must come back to the federal government, probably again through the DHS (from non–law enforcement entities) and the JTTFs (from law enforcement). Again, it is vital that there be some uniformity of reporting format and interoperability of communication methods.

Vignette 2: Information-sharing between and within government agencies

A THREAT TO MALLS

The National Security Agency (NSA) issues a report saying that sensitive intercepted communications (in this case, phone calls) among known Al Qaeda leaders abroad indicate that final preparations are being made for terrorist operations against targets in the U.S. Speakers have mentioned "malls," or perhaps "the Mall," and have referred to "the other city." In one conversation, they have also mentioned "movie theaters."

Meanwhile, two months prior, the Pittsburgh police received a tip from an anonymous source saying that one Mr. William Joseph, a local businessman, is involved in a plot to stage some sort of terrorist attack in the city. The Pittsburgh police shared the report with the FBI field office. The police and the FBI have since met to discuss the case and have agreed to share the investigatory and surveillance burdens. The FBI will obtain any subpoenas that are required.

TOP SECRET

NSA Report of Telephone Target
Translator: Jane Jones

I. Time of call: 29062245
Ahmed calls Khalid.

A: Hello, Khalid. Our plans are complete.

K: Ahmed? OK. This is you?

A: Yes, it is me. Of course. Our plans are complete for the malls.

K: What? Did you say dogs?

A: [impatient] No, no. The malls.

K: Yes, yes. It is early, Khalid. Malls. Yes. And what about the other city?

A: Our people in the other city are ready.

K: OK, Ahmed. Are you sure the plans are complete? Have the gifts arrived?

A: I will check on the gifts.

K: Yes. Well, phone me again.

II. Time of call: 30060830
Ahmed calls Khalid.

A: Hello, Khalid?

K: Yes.

A: I'm telling you the plans are complete.

K: What about the theaters?

A: They will need to find the theaters.

K: Well, find the theaters.

III. Time of call: 30061100
Khalid calls unknown person.

K: Ahmed says the plans for the mall are complete.

U: Excellent.

FOR EXERCISE ONLY

TOP SECRET

EXECUTIVE REPORT

June 30, 2003

FROM: DIRNSA
TO: See distribution
DOI: See below

SUBJECT: Al Qaeda Planning Attacks in the U.S.

On 29 June 2003, two probable Al Qaeda members were discussing plans for terrorist attacks, probably in the U.S. One "Ahmed" (NFI) told "Khalid" (NFI) that the plans for the "malls" were complete, and that "our people in the other city are ready." Later that same day, the two spoke again, referring again to the "malls" and mentioning the need to "find the theaters."

On 23 June 2003, Khalid was speaking with another contact (unknown). This time he referred to "the mall."

Comment: It is not known whether the speakers are using "mall" as a codeword or are actually referring to a shopping mall. Similarly, the reference to "theaters" could be a codeword. Alternatively, terrorists could be planning operations against the National Mall in Washington, DC.

According to collateral information, during military operations against the Taliban and Al Qaeda in Afghanistan, journalists found maps of the National Mall in an alleged safe house. The maps included X's to mark storm sewers and metro stops.

No timing was given for the attack, but the persons spoke as if operations were imminent.

Distribution (by fax):
DCI
White House Situation Room
D/DIA (for SecDef) [Director, DIA]
Sec/HS (hand carry)
D/FBI

FOR EXERCISE ONLY

SECRET

FROM: DIRNSA
TO: 062922452

SUBJECT: Terrorists Discuss Plans

On 29 June 2003, two probable Al Qaeda members were discussing plans for terrorist attacks probably in the U.S. In the course of the conversation, the two referred to "malls" and "theaters." In another conversation, one of them referred to "the mall."

COMMENT: The probable terrorists could be using "malls" and "theaters" as code words. Alternatively, they could be referring to the National Mall. According to collateral information, during military operations against the Taliban in Afghanistan, journalists found maps of the National Mall in an alleged safe house.

FOR EXERCISE ONLY

City of Pittsburgh

BUREAU OF POLICE

REPORT OF TIP

ZONE: 6
DATE: April 25, 2003
TIME: 2:23 p.m.
SOURCE: Anonymous

A male caller to Zone 6, who would not give his name, and was calling from a pay phone on the corner of Murray and Forbes, said he wanted to report some "terrorist activity." He said he had observed "suspicious activity" at the house of one Mr. William Joseph, who resides at 2455 Hastings Street.

The caller said that a number of cars appear at the Joseph residence each Thursday night, several males come in each car, and he can hear "Arab" music coming from the house. Caller said he decided to investigate on his own. About 11 p.m. the previous evening, caller had entered the Joseph yard and peered in the window, where he saw a gathering of males, and pictures on the wall of Osama bin Laden. Also on the wall were maps of Pittsburgh marked with two large red X's. Caller said one of the X's was in the area of the Robinson Center (a shopping mall). Caller added that at least two cars had Maryland license plates.

Follow-up: Officers will locate residence and will mount surveillance on the next Thursday.

FOR EXERCISE ONLY

Federal Bureau of Investigation
Pittsburgh Field Office

May 6, 2003

LAW ENFORCEMENT INFORMATION

Letterhead Memorandum

SUBJECT: Meeting with Pittsburgh Police to Discuss Issues of Mutual Interest

Officers Smith and Brown, Pittsburgh Police Bureau, Zone 6, met with field agents of this office today to discuss a number of items of particular interest to both organizations. Some involved ongoing investigations in the area of organized crime. The subject of this memorandum concerns a possible terrorist threat brought to the attention of the police by an anonymous source.

The Pittsburgh Police Bureau received an anonymous call from an individual presumed to be a neighbor reporting "suspicious activity" possibly related to terrorism. The assumed neighbor had reported weekly gatherings (each Thursday evening) at a residence (2455 Hastings Street, Pittsburgh), involving a dozen or so males. The neighbor reported "Arab" music coming from the house, pictures of Osama bin Laden on the wall, and a map of Pittsburgh marked with two red X's. The informant had told police he thought one X was in the area of the Robinson Center, a shopping mall with many retail stores, restaurants, and several movie theaters. The owner of the house is William Joseph.

The caller said that at least two of the cars had Maryland license plates.

Police subsequently surveilled the house on the following Thursday. They corroborated the source's description of the cars and their occupants. One officer approached the side of the house to determine if he could see in a window. He reported hearing Middle Eastern music coming from the house, but was unable to see under the window shades, which were almost completely drawn.

The Pittsburgh field office will undertake to investigate Mr. Joseph's bona fides (citizenship/status, employment, contacts with known terrorists and terrorist organizations). Any subpoenas or court orders required for credit card, travel, telephone records, etc. will be handled by the FBI. Affidavits may be requested from the Pittsburgh Police Bureau in conjunction with requests for subpoenas.

The Pittsburgh Police Bureau will continue surveillance on the residence in question, and will provide license-plate traces on all cars visiting. The police will extend their surveillance time to include Thursday evenings plus other times.

Our next scheduled meeting is May 20, 2003.

FOR EXERCISE ONLY

How the information would likely be handled today

The National Security Agency transcript and report

The transcript of the intercepted conversation would go to an NSA analyst, who would produce a report. The full report would be classified "Top Secret," but a second "Secret" version might also be prepared. The fact of the NSA's access to the phones of at least one of these individuals would be considered extremely sensitive. The "Top Secret" report would go to the DHS, the TTIC, the FBI, the CIA, the Department of Defense (DoD), and the White House, and it—or at least a "Secret" version of it—might also be accessible to other cleared intelligence-community and law enforcement personnel, including JTTF members. No agency would prepare an unclassified version of the report that could be distributed to state and local entities or the private sector.

Note that the analyst identifies a "U.S. nexus," although the conversation does not say anything about the U.S. The analyst might know, however, that previous conversations between these two probable terrorists discussed operations in the U.S. Or, based on knowledge and expertise, the analyst might have concluded that they were most likely talking about the U.S.

The Pittsburgh police report and FBI memorandum

It appears from the documents in this vignette that the Pittsburgh Police Bureau Zone 6 officers have ongoing joint criminal investigations (non–terrorism related) with the FBI. Thus Zone 6 used this opportunity to convey the information about the suspicious activity, possibly terrorism-related, to the FBI. The agency's Pittsburgh office would send this information to the Pittsburgh JTTF, as well as to FBI headquarters. FBI headquarters might transfer the information to an IIR and provide it to the TTIC, although this probably would not happen until after an FBI field investigation has been completed. In any event, FBI personnel might alert the TTIC to the information by informal email. In either case, the information would be included in the TTIC analysis described below, assuming the TTIC could obtain the FBI's permission to disseminate. If FBI personnel believe dissemination would interfere with an ongoing investigation, the FBI might not give this permission.

In any case, Maryland license plates indicate a possible connection with another city (Baltimore or Washington, DC). It is possible, but far from certain, that the FBI, Pittsburgh JTTF, or Pittsburgh Police Department would pass this information to local law enforcement agencies in those cities, to the Maryland State Police, or to the Baltimore and Washington, DC, JTTFs.

TTIC analysis

The TTIC might prepare an analytical product that includes the NSA information and, assuming the TTIC received it, the information from the Pittsburgh FBI. This TTIC product would go to all of the same recipients as the NSA product, and would be placed on TTIC Online. But it would also be sent to the Pittsburgh FBI and from there to the Pittsburgh JTTF. This product would be classified "Secret" and would not go to state, local, or private sector entities.

The DHS has a mandate to provide information and warnings to the private sector. It does this for some industries that have been identified as the critical infrastructures, such as the communications sector and the airlines, but not across the board for industries that could be targets of terrorism. The DHS currently has no system for providing information such as the contents of the NSA report or the TTIC analysis, even if it were unclassified, to private sector theater- or mall-owners or to their security firms. To provide this warning, the DHS probably would work with state or local emergency staffs and might agree to have the FBI provide the information through its contacts with state and local law enforcement.

Additional sharing needed

This vignette demonstrates again that the most significant information roadblock is between the federal government and state, local, and private sector entities. The two pieces of information in this scenario—information from the NSA intercept and from the Pittsburgh police—would be available to be correlated and analyzed at the Pittsburgh JTTF, FBI headquarters, and probably the TTIC. The key issue would be a failure to produce a sanitized, unclassified report of the NSA information that could be conveyed to the state, local, and private entities.

Although the intelligence agencies have come a long way since September 11, in their recognition of the need to sanitize intelligence for use by a broader audience, they still don't see nonfederal entities as their consumers. That is, the intelligence agencies see their job as sending information up to the President and senior officials—not out to the entities that might serve as sensors to collect and contribute additional information. The federal agencies whose responsibility it is to communicate with these state, local, and private entities—the DHS and the FBI via the JTTFs—do not have the authority to declassify intelligence reports from the NSA or the TTIC. Therefore, the original classifiers must have the responsibility to produce an unclassified version of intelligence reporting at the same time that they produce the classified version. If the DHS or the JTTFs do not feel the unclassified version contains enough useful information, they should have the responsibility of going back to the originator and asking to have more details included in the declassified report.

Additional output needed in this vignette would include a version of the NSA report that is sanitized to the unclassified level. This unclassified version would not mention a source or that the information came from the NSA, but would retain more than merely a generic warning. It would read something like this:

> *Recently acquired information indicates a possible threat to malls, or possibly theaters. No specific time frame or location is indicated, but the threat did seem to imply that it would be soon.*

The DHS would convey the information from this report to private sector contacts with responsibility for security at malls, theaters, and other similar potential targets. To do this, the DHS would have to develop relationships, contacts, and reliable communication mechanisms with all relevant industries. The method of communication could be email (although email lists are hard to keep current) or some other method that pushes information to recipients. The JTTFs would also push the unclassified NSA information to state and local law enforcement agencies.

Also, information from the Pittsburgh police and FBI reports should find its way to the Maryland and Washington, DC, police because of the license-plate information that suggests a tie to those jurisdictions. The Pittsburgh police and the Pittsburgh JTTF should pass this information on to these local law enforcement entities.

Once the information from the NSA report and the Pittsburgh police is communicated to the state, local, and private sector recipients, the recipients will be sensitized to look for information relating to possible terrorist planning or activity at malls, theaters, and similar potential targets. This will inspire a second level of input to the federal government, most likely through the DHS and the JTTFs.

Vignette 3: Information-sharing between and within government agencies

HAZARDOUS MATERIALS

On a police blotter in Hartford, CT, it says that police were called to the rail yards when a worker spotted several strangers lurking around a train. This train included tank cars carrying hazardous materials.

Meanwhile, security officials at a chemical plant in Convent, LA, that produces chlorine have noted the presence of intruders who appeared to be monitoring the loading of rail cars. The intruders ran away when they were approached.

According to a local newspaper, a zoo in Louisiana reports that several animals have died of apparent poisoning from chlorine gas. Zoo officials tell the press that a fire started in a shed where a large jug of chlorine had been placed. Zoo officials are perplexed because, although chlorine is used for cleaning out pens at the zoo, it is not ordinarily stored in the shed, which is used to store feed.

At the same time, a CIA source in Southeast Asia reports that several months ago he was present at a meeting of terrorists associated with Al Qaeda, at which the terrorists were discussing the long, unguarded rail lines and lightly monitored rail yards in the U.S. and speculating that it would be possible to use this vulnerability to stage an attack.

Hartford Police Department

INCIDENT REPORT

DATE	TIME	LOCATION	DESCRIPTION	ARREST
05:30 am	6/23/03	Hartford Rail Yards	Worker at Hartford Rail Yard spotted two males lurking about among the rail cars stopped in the yard about 5:10 a.m. When approached, subjects fled the scene. Rail yard shift superintendent, one John Bahnman, called department at 5:17 because cars transporting hazardous material, including chlorine gas, were in the area. There was no sign that the subjects had tampered with or actually approached these rail cars. Officers Briscoe and Green responded to the call.	None

FOLLOW-UP: Hartford Rail Yard will increase patrols, especially when rail cars carrying hazardous materials are in the yard. Department will increase presence in area for a period of 14 days to show force.

FOR EXERCISE ONLY

ACME CHEMICAL COMPANY

Convent, LA 70723

Security Department

INCIDENT REPORT

DATE: June 27, 2003

TIME: 2:30 p.m.

LOCATION: Near the rail line, along the northwest fence

DESCRIPTION: At approximately 2:30 this afternoon, Mr. Daniel Surpoids of the security department spotted four males sitting on a low wall, inside the fence and along the rail line. Two of them appeared to be writing something, perhaps taking notes, as the rail cars were being moved out of the filling area. These individuals were medium height and weight and had dark hair. Some may have had moustaches, and two appeared to be carrying clip-boards. When approached, they fled. Mr. Surpoids reports they were very fast and quickly disappeared from sight.

FOR EXERCISE ONLY

The Jefferson Courier
ALL THE NEWS THAT FITS, WE PRINT

June 30, 2003

Several Monkeys at the Zoo Succumb to Chlorine Fumes

(JEFFERSON) Five monkeys, comprising the zoo's entire collection of capuchin and howler primates, died Sunday night under mysterious circumstances. The monkeys apparently succumbed to chlorine gas, which was emitted from several jugs of liquid

chlorine when the shed in which the chlorine was stored caught fire.

Zoo authorities are conducting an internal investigation to determine how several bottles of chlorine bleach, used to clean the animal cages at the zoo, ended up in a shed adjacent to the primate area. The shed is used to store feed for the animals.

"This is just awful. I can't understand how chlorine could even be in that shed," said Paul Le Singe. "We do use chlorine to clean out the animal cages, but it is stored really far away. All the cleaning products are."

The shed apparently burned itself out during the night. When they arrived in the morning, zoo authorities called the fire department. The firefighters who responded found the burned chlorine bottles. Toxicology analysis, which is expected to confirm that the monkeys died of chlorine gas poisoning, is expected to be completed in a few days.

"This is just awful. I can't understand how chlorine could even be in that shed."

Another question that remains unanswered is why the night watchman, Mr. John Leon, did not notice the fire.

FOR EXERCISE ONLY

SECRET

FERBD-616-85410

FROM: CIA
TO: See distribution
DOI: June 25, 2003
COUNTRY: Malaysia/U.S.
SUBJECT: Persons with Links to Terrorist Organizations Discuss Vulnerabilities in U.S.
SOURCE: A source of unknown reliability who may have access to the information

1. A source of unknown reliability claimed that he had been present at a meeting in February 2002 of persons associated with an organization that is affiliated with Al Qaeda in which members were discussing ideas for future attacks against the U.S. According to the source, those present at the meeting were lamenting that security in the U.S. had tightened, that most vulnerable areas had been alerted to possible threats, and opportunities for attacks were becoming more limited.

2. The source reports that, in response to these statements, one member of the group said that there were many remaining vulnerabilities in the U.S., and that the opportunities for attack were limited only by the defeatist views just expressed. He noted that, for example, there were thousands of miles of unguarded rail lines, including through most major cities, and hazardous materials were transported along these lines every day.

3. The individual leading the discussion then told the previous speaker to get together with two named individuals (NFI) and come up with a plan to use the U.S. rail lines as a means of attack.

4. **Comment:** The source claims he was invited to the meeting by a friend who knew of the source's deep religious beliefs and his hatred for Western culture. The source claims, however, that he is not a terrorist himself.

FOR EXERCISE ONLY

How the information would likely be handled today

The Hartford Rail Yard and Hartford Police Department reports

The telephone report from a worker at the Hartford Rail Yard might be reported by the rail yard to the railway industry's Information Sharing and Analysis Center (ISAC). ISACs are industry task forces that collect, analyze, and disseminate information about industry threats and vulnerabilities. The railway industry has an active and effective ISAC, which means the ISAC would likely distribute this report to its members and might also report the information to the Infrastructure Protection Directorate at the DHS. Whether the information would then be disseminated to other parts of the DHS, such as the Information Assurance Directorate, or the TTIC, is less clear. The Hartford Police Department report might be stored digitally, but it would not necessarily be easily retrievable and it is unclear how long it would be retained.

The Acme Chemical Company incident report

The Acme Chemical Company incident would be included in a daily report of incidents sent to the plant manager. The plant manager would likely direct the security department to watch aggressively for more such activity. The incident would not be reported to the Convent, LA, sheriff's office unless there was a repeat incident. In our scenario, this incident report probably is not saved digitally.

The Jefferson Zoo incident

Most likely, there would be no written report of the incident at the Jefferson Zoo other than the newspaper account. The zoo would not report the incident to the Jefferson, LA, police unless zoo officials uncovered something suspicious during their internal investigation. Someone in the Jefferson, LA, police department might notice and remember the newspaper article. In the best case, someone at the Acme Chemical Plant (not far from Jefferson, LA) who also knew about the monitoring of the rail cars, would notice the newspaper article and alert the local police or the FBI.

The CIA report

In our scenario, this a routine human-source (HUMINT) report from a source in Malaysia. This report does not contain source information so sensitive that the report would require "paper only" distribution. Instead, this report would likely be disseminated electronically to the intelligence community, including the TTIC, the FBI, and the White House Situation Room. It would be placed on TTIC Online and would be available to be pulled by cleared DHS and JTTF personnel who search that system. No information about this report would go to state or local law enforcement or to chemical companies or railroads. Those entities would be aware, generally, of warnings of risks to their industries from terrorists.

Additional sharing needed

This vignette illustrates the difficulty of separating signal from noise with information on possible terrorist activity. The initial report from Acme Chemical, and the incident at the Jefferson Zoo would, in isolation, be considered noise by those receiving the reports. Therefore, the information would not make its way into the network unless some additional information came in that highlighted its significance. The report from the Hartford Rail Yard might make its way, through the ISAC, to other rail yards and the DHS, but it is more likely that it would be seen as insignificant. The CIA report could be the additional information that would highlight the significance of these incidents, but it would have to get out to the sensors who, in turn, would be triggered to share their input with the federal government.

To get additional output, the CIA would have to create a sanitized, unclassified version of the CIA report at the time it was first prepared. This unclassified report could be disseminated to state and local entities and to the private sector. The DHS could take this information and reach out to task forces such as ISACs, in the chemical and railroad industries. These task forces would then use established communication mechanisms

to get the information out to individual companies in their industries. The JTTFs, in turn, could push the sanitized information out to state and local law enforcement agencies.

Even so, when the state, local, and private sector entities received this output, they would not uncover the three incidents described in our scenario unless they went back to past records or happened to recall the incidents. Therefore, the additional output from the federal government would have to do more than provide information. To be more effective at triggering necessary responses from local and private sector entities, the output would have to include a request that these entities search for information about the specific threats mentioned in the CIA report. Some entity—probably the FBI, the DHS, or the TTIC—would have to initiate this request for additional input.

Once the state, local, and private sector entities received the sanitized CIA information and the request for input, they would be far more likely to recognize the significance of the Hartford Rail Yard, Acme Chemical Company, and Jefferson Zoo incidents—and to provide this additional input to the network. The most significant challenge at that point would be that to retrieve information about these and similar incidents, without relying solely on memories, the companies and police departments would have to search their internal records. Because of this, such records, particularly those of the law enforcement agencies, must be maintained digitally, in a manner that can be searched, and subject to some retention requirement.

The information generated by state, local, and private entities should make its way back to the TTIC, but the TTIC should not be the only place where this information is correlated, assessed, and analyzed. To be most effective, the system should also encourage communication among regional entities, within industries, at the local level, and in other decentralized ways, including among centers of expertise in government, industry, and academia. In this scenario, communication among local police departments in Louisiana about suspicious activity involving hazardous chemicals, or among JTTFs in Hartford and New Orleans about activity in rail yards where chemicals are present, could trigger additional questions, investigation, and analysis that would lead to even more information in the system.

Vignette 4: Information-sharing between the private sector and government agencies and between and within government agencies

SKYDIVERS AND MALLS

The NSA issued a report in late June that sensitive intercepted communications among known Al Qaeda leaders abroad indicate that final preparations are being made for terrorist operations against targets in the U.S. Speakers have mentioned "malls," or perhaps "The Mall," and have referred to "the other city." In one conversation they also mentioned "movie theaters."

Earlier, the FBI's Chicago field office picked up some information from an informant claiming that terrorist cells in the U.S. were discussing various methods for attacks, including general aviation, scuba divers, crop dusters, and skydivers. The Urgent Report from the Chicago field office to FBI headquarters, dated March 30, 2003, indicates that the SAC thinks this is pretty low-level intelligence but is "leaning forward" on reporting.

In early August, the NSA picked up a communication in which a presumed Al Qaeda figure mentioned skydivers. The speaker has been identified, and it is known that he has visited Texas twice.

Now, five individuals with names of apparent Middle Eastern origin/ethnicity have enrolled in skydiving classes in five divergent areas of the country (Texas, Pennsylvania, Rhode Island, Illinois, and Florida). All have used student identification from nearby universities.

Interest is converging on Texas, however, where one of the skydivers is asking to rent a Cessna 182 (commonly used by skydivers). Another individual, possibly with a similar ethnic origin, is trying to rent another Cessna 182 at another airfield in Texas. Both individuals want to rent the planes during Thanksgiving weekend—a big shopping weekend, and therefore a possible "mall" connection.

The skydiver in Texas is also showing an interest in explosives. He has visited a relevant website and has ordered a how-to book, using his VISA card.

NSA Report of Telephone Target
Translator: Jane Jones

I. Time of call: 29062245
Ahmed calls Khalid.

A: Hello, Khalid. Our plans are complete.

K: Ahmed? OK. This is you?

A: Yes, it is me. Of course. Our plans are complete for the malls.

K: What? Did you say dogs?

A: [impatient] No, no. The malls.

K: Yes, yes. It is early, Khalid. Malls. Yes. And what about the other city?

A: Our people in the other city are ready.

K: OK, Ahmed. Are you sure the plans are complete? Have the gifts arrived?

A: I will check on the gifts.

K: Yes. Well, phone me again.

II. Time of call: 30060830
Ahmed calls Khalid.

A: Hello, Khalid?

K: Yes.

A: I'm telling you the plans are complete.

K: What about the theaters?

A: They will need to find the theaters.

K: Well, find the theaters.

III. Time of call: 30061100
Khalid calls unknown person.

K: Ahmed says the plans for the mall are complete.

U: Excellent.

EXECUTIVE REPORT

June 30, 2003

FROM: DIRNSA
TO: See distribution
DOI: See below

SUBJECT: Al Qaeda Planning Attacks in the U.S.

On 29 June 2003, two probable Al Qaeda members were discussing plans for terrorist attacks, probably in the U.S. One "Ahmed" (NFI) told "Khalid" (NFI) that the plans for the "malls" were complete, and that "our people in the other city are ready." Later that same day, the two spoke again, referring again to the "malls" and mentioning the need to "find the theaters."

On 23 June 2003, Khalid was speaking with another contact (unknown). This time he referred to "the mall."

Comment: It is not known whether the speakers are using "mall" as a code word or are actually referring to a shopping mall. Similarly, the reference to "theaters" could be a code word. Alternatively, terrorists could be planning operations against the National Mall in Washington, DC.

According to collateral information, during military operations against the Taliban and Al Qaeda in Afghanistan, journalists found maps of the National Mall in an alleged safe house. The maps included X's to mark storm sewers and metro stops.

No timing was given for the attack, but the persons spoke as if operations were imminent.

Distribution (by fax):
DCI
White House Situation Room
D/DIA (for SecDef) [Director, DIA]
Sec/HS (hand carry)
D/FBI

FOR EXERCISE ONLY

FROM: DIRNSA
TO: 06292245Z

SUBJECT: Terrorists Discuss Plans

On 29 June 2003, two probable Al Qaeda members were discussing plans for terrorist attacks, probably in the U.S. In the course of the conversation, the two referred to "malls" and "theaters." In another conversation, one of them referred to "the mall."

COMMENT: The probable terrorists could be using "malls" and "theaters" as code words. Alternatively, they could be referring to the National Mall in Washington, DC. According to collateral information, during military operations against the Taliban in Afghanistan, journalists found maps of the National Mall in an alleged safe house.

FOR EXERCISE ONLY

Federal Bureau of Investigation
Chicago Field Office

March 30, 2003

URGENT REPORT

TO: Director Mueller
Deputy Director Gebhart
Executive Assistant Director D'Amuro
Assistant Director Mefford
Section Chief Doe
Unit Chief Bob/Bob

FROM: SAC Smith/TFS

RE: Case no. 182342-E

As part of the ongoing effort by this office to root out information on terrorist threats, Special Agent Morrison recently learned from a source that terrorist cells within the U.S. are weighing a number of options for terrorist attacks. The source talked about an array of methods that have been reported elsewhere: general aviation, scuba divers, crop dusters, and, now skydivers, although he could provide no specifics. He was unable to provide names of possible conspirators, their location, or the timeframe for possible attacks. SA Morrison directed the source to acquire this information if at all possible and to contact him promptly. SA Morrison plans to follow up with the source in the event the source does not initiate contact.

The source is a member of the local Middle Eastern community. He is not known to be involved with terrorists either here or overseas. He has not previously reported on international terrorist matters.

Given Headquarters guidance to "lean forward" on any matters relating to terrorism, however, we are passing this on in case it helps to connect some dots.

FOR EXERCISE ONLY

FROM: DIRNSA
TO: 081545Z

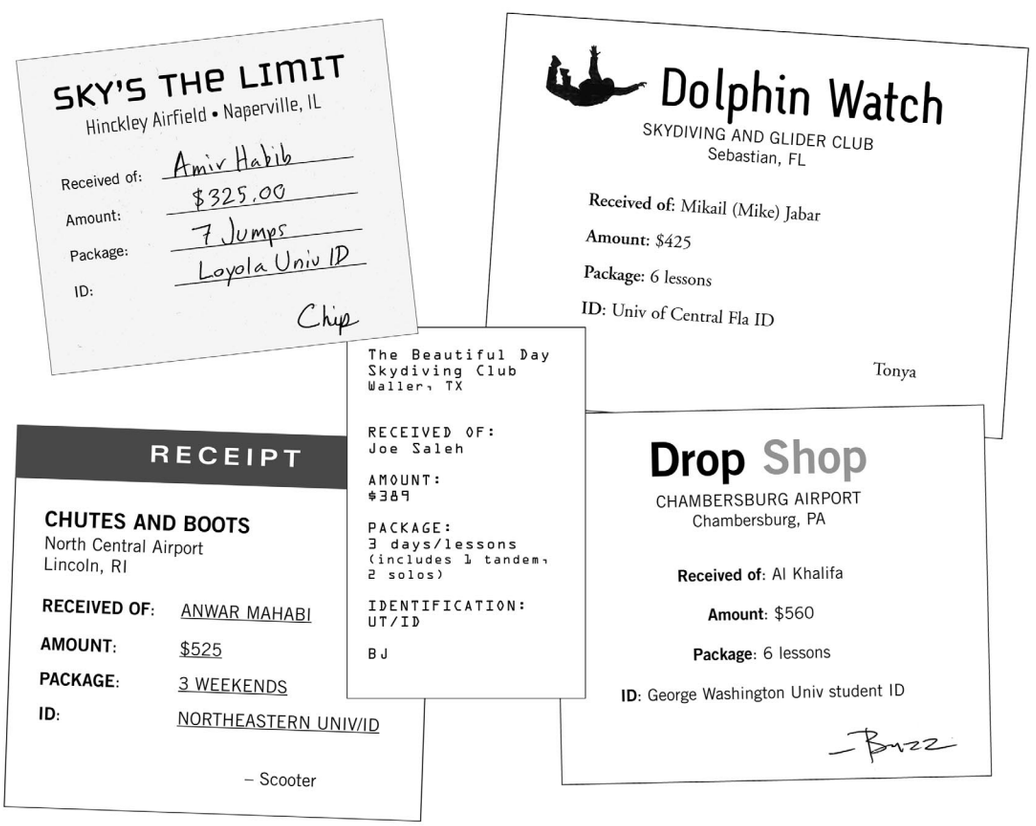
SUBJECT: Terrorist Plans

On 7 August 2003, a probable Al Qaeda figure, Ahmet Hafs, in a conversation with an unknown contact, mentioned some apparent plans for "skydivers."

COMMENT: This is the first time the intelligence community has noted mention of skydivers by a known terrorist operative.

8/10/03
Chief: Ran the traps on "Ahmet Hafs." He got a visa to visit the U.S. in 1999 and again in mid-2001. He visited Texas on both trips. – CB

FOR EXERCISE ONLY



FOR EXERCISE ONLY

Lexington Airfield • Lexington, TX

PHONE MESSAGE

FOR: Star
CALLER: Sonny Sabril

Says he's a licensed pilot wishing to rent one of your Cessna 182s for one half-day. Wants to know if $130 per hour is price. Is planning to take some friends for a ride as a special birthday celebration for one of them and will only need the aircraft for about two hours on a Saturday during Thanksgiving weekend.

Says he will be in area in a couple weeks and can be checked out then. Says he'll pay for rental then, if you want.

cell phone (222.982.2309), wingman@spotmail.com

The Beautiful Day Skydiving Club
Waller, TX

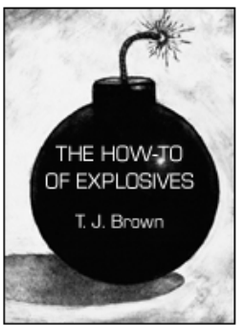
PHONE MESSAGES

FOR: BJ
CALLER: JOE SALEH
MESSAGE: HE'S ONE OF YOUR STUDENTS. WANTS TO RENT THE CESSNA FOR A FEW HOURS THANKSGIVING WEEKEND. SAYS YOU HAVE HIS CELL. EMAIL IS JSALEH@SPOTMAIL.COM. HE'S AT UT AND CAN DRIVE OUT ANY TIME FOR A CHECKOUT. SAYS TO TELL YOU HE LOVED THE LESSONS. TEACHER'S EXCELLENT.

Back Forward Stop Refresh Home AutoFill Print Mail

Address: http://www.ioee.org go

International Organization of Explosives Experts



The How-to of Explosives 1991.

Price: $95.00

by T. J. Brown. Information, with illustrations, about blasting products for special applications.

ADD TO CART

Send to:

Joe Saleh
345 Happy Valley Way
Austin, TX

Payment:

Credit Card:
VISA
4587 2542 6871 4751
exp. 09/04

Information-sharing: how this information would likely be handled today

The NSA transcript and report on malls

The transcript of the intercepted conversation related to malls would go to an NSA analyst, who would produce a report. The full report would be classified "Top Secret," but a second "Secret" version could also be prepared. The fact of the NSA's access to the phones of at least one of these individuals would be considered extremely sensitive. The "Top Secret" report would go to the DHS, the TTIC, the FBI, the CIA, the DoD, and the White House, in paper form. A "Secret" version of it, at least, might be accessible electronically, via TTIC Online, to other cleared intelligence community and law enforcement personnel, including at JTTFs nationwide. No agency would prepare an unclassified version of the report that could be distributed to state and local entities or the private sector.

Note that the analyst in our vignette identified "U.S. nexus," although the conversation did not say anything about the U.S. The analyst might have known, however, that previous conversations between these two probable terrorists included discussion of operations in the U.S. Or the analyst might have concluded based on knowledge and expertise that they most likely were talking about the U.S.

FBI report on skydiving

The FBI report about possible terrorist methods, including skydiving, would be provided to the Chicago JTTF and to FBI headquarters in Washington, DC. Because the source would be considered untested, it most likely would not be turned into an IIR, although the information it contains might be conveyed informally to TTIC personnel. The information would not find its way to JTTFs around the country or to state and local law enforcement or private sector entities, such as skydiving clubs.

The NSA report on skydiving

The NSA intercept about terrorists' interest in skydiving would be distributed to officials at the White House, the TTIC, the DHS, the FBI, the CIA, and the DoD, at least in paper form. It might be made available electronically via TTIC Online to all federal intelligence community and law enforcement organizations. Because no unclassified version would be prepared, the report's contents would not be available to state or local law enforcement or to private sector entities. Because the NSA report has a specific connection to the Texas area, FBI field offices and JTTFs in Texas would be notified. The TTIC or the FBI may request that the NSA further sanitize the report to be handled as unclassified law-enforcement-sensitive information for distribution to state and local law enforcement authorities, possibly through the National Law Enforcement Telecommunications System (NLETS).

TTIC and other intelligence analysis

Reference to the two NSA reports on malls and skydiving would be included in the Daily Threat Matrix and perhaps in TTIC analytical products produced by other agencies, such as the Transportation Security Administration (TSA) or the Bureau of Immigration and Customs Enforcement (BICE), for their leadership. These products would go to all of the same recipients as the NSA product and would be placed on TTIC Online. These products would be classified and would not go to state, local, or private sector entities.

The DHS has a mandate to provide information and warnings to the private sector. It does this for some industries that have been identified as the critical infrastructures, such as the communications sector and the airlines, but not across the board for industries that could be targets of terrorism. The DHS currently has no system for providing such information as the contents of NSA reports or TTIC analysis, even if it were unclassified, to private sector theater or mall owners or their security firms, or to skydiving clubs. To provide this warning, the DHS would probably work through state or local emergency staffs and might agree to have the FBI provide the information through its contacts with state and local law enforcement.

Additional sharing needed

This vignette demonstrates that the most significant information roadblock is between the federal government and state, local, and private sector entities. The pieces of information in this vignette—information from the NSA intercepts and the Chicago FBI—would be available to be correlated and analyzed at the FBI headquarters, and probably the TTIC. Here, the key issue is the absence of a rapid, effective process to produce a sanitized, unclassified report of the NSA information that could be conveyed to the state, local, and private entities, particularly mall and theater owners and their security firms, but also to skydiving clubs.

Although the intelligence agencies have come a long way since September 11 in their recognition of the need to sanitize intelligence for use by a broader audience, they still do not see nonfederal entities as their consumers. That is, the intelligence agencies see their primary job as sending information up to the President and senior officials, not out to the entities that might serve as sensors who collect and contribute additional information or who need to be prepared to prevent or respond to terrorist action. The federal agencies whose responsibility it is to communicate with these state, local, and private entities—the DHS and the FBI via the JTTFs—presently do not have the authority to declassify intelligence reports from the NSA or the TTIC. Therefore, the original classifiers must have the responsibility to produce an unclassified version of intelligence reporting at the same time that they produce the classified version. If the DHS or the JTTFs do not feel that the unclassified version contains enough useful information, they should have the responsibility to go back to the originator and ask that more detail be declassified.

Additional output needed in this vignette would include a version of the NSA reports that are sanitized to the unclassified level. The unclassified versions would not mention a source or that the information came from the NSA, but they would retain more than merely a generic warning.

The DHS would convey the information from these reports to private sector contacts with responsibility for security at malls, theaters, and other similar potential targets and to skydiving clubs. To do this, the DHS would have to develop relationships, contacts, and reliable communication mechanisms with all relevant industries. The method of communication could be email (although email lists are hard to keep current) or some other method that pushes information to recipients. The JTTFs would also push the unclassified NSA information to state and local law enforcement agencies. The information should also be available to be pulled by analysts throughout the network who have the necessary permissions or authorities, in case those analysts do not realize the relevance of the information to their work until a later date, when additional information comes in.

Once the information from the NSA reports and the Chicago FBI report was communicated to the state, local, and private sector recipients, they would be sensitized to look for information relating to possible terrorist planning or activity at malls, theaters, and similar potential targets. In addition, skydiving clubs would be alert for suspicious behavior. This would inspire a second level of input to the federal government, most likely through the DHS and the JTTFs.

Use of private data: how the government would obtain and use the information today

The records of skydiving lessons

The FBI and NSA reports indicating skydiving as a possible method of terrorist attack may have prompted alert and aggressive FBI field offices to inquire about people who had taken skydiving lessons or otherwise shown an interest in skydiving. To inquire about this, the officers would contact skydiving clubs in their areas. But without more specific search parameters, the numbers of students or inquirers would have been too high

to permit follow-up on all of the names. FBI field-office agents would likely attempt to reduce the number to a manageable volume, perhaps by first looking at recent training records of immigrants from select countries of concern or of people with Arab-sounding names.[3] They might also investigate students who were deemed "suspicious" in a report from the skydiving instructor or club owner.

The NSA intercept concerning a suspected terrorist who had traveled to Texas probably would have caused Texas FBI field offices to conduct a more thorough investigation. In addition to questioning personnel in local skydiving clubs about suspicious activity, they would likely have asked for lists of people who had taken lessons in the past few months or year. Skydiving clubs, for the most part, do not keep records in a searchable form. (There might be digital records of people who have skydiving certification, but such records would not be the only relevant documents—terrorists probably would not see a need to become certified to carry out their plans.) Therefore, the FBI personnel would have to prepare their own lists of names based on conversations with skydiving-club personnel. The lists would be long, and the challenge for the FBI at that point would be to reduce them to a manageable number of people who could be investigated further.

One first step would be to compare the names with government databases to obtain more information. However, local field offices are not connected directly to most relevant databases. A field agent would probably need to submit the list to others at FBI headquarters to conduct the searches. The field office would probably prioritize its submissions to FBI headquarters based on information from the skydiving-club personnel about suspicious activity, apparent Arab origin of names, and other factors that lead them to have some level of concern. Prioritization would also be based on access by the field office to FBI-wide case and watch list databases. Besides submitting the names to headquarters, the field-office agents might—with the requisite legal basis—open preliminary investigations (or threat assessments, a more preliminary step under the new Attorney General's Guidelines on National Security Investigations and Foreign Intelligence Collection, effective October 31, 2003) on the higher-priority individuals and reach out for assistance through their local JTTF.

At FBI headquarters, the names would be checked against other local online database and hard-copy records at the FBI as well as with other federal agencies. One new step would be to check the names with the BICE at the DHS to determine whether any of the people were not U.S. citizens, had outstayed their visas, or had entered the country recently. The BICE has a variety of data-bases with information on immigrants and visitors to the U.S. These include the Student and Exchange Visitor Information System (SEVIS), which manages and maintains data about foreign students and exchange visitors; the National Security Entry-Exit Registration System (NSEERS), which contains detailed registration information about foreign visitors of "elevated national security risk"—primarily nationals of certain "high-risk" countries; and the United States Visitor and Immigration Status Indication Technology (US VISIT) system, a new system that will manage data—including biometric identifiers and entry, exit, and status information—on all visitors to the U.S. The field agent would probably submit a query to the BICE's Law Enforcement Support Center (LESC), a national enforcement-operations center located in Vermont. The LESC gathers information from eight DHS databases, including SEVIS, NSEERS, US VISIT, and other former INS, Customs Service, or Federal Protective Service databases.

From searches of the watch list and BICE records, discussions with skydiving-club personnel, and other initial investigation, the FBI might conclude that some smaller number of names—even as many as 100—merited additional investigation. At that point, the investigators could search aggregated public-records data—from a commercial data aggregator—to determine whether there were other reasons for suspicion. For example, searches of these records could reveal false identities, or show that someone lived with or associated with people on the watch lists, or with others on the lists of skydivers. Any of these could be a reason to keep a person on the list. If that search narrowed the suspicious names down to a very small number, link analysis could be done on those names to determine their association with others around the country. That would give FBI personnel in other jurisdictions something more concrete to check against lists of skydivers in their areas.

[3] Despite concerns about ethnic profiling, it is highly likely that Arab-sounding names—and other indicators of possible Middle Eastern background—are taken into account by agents trying to make gross determinations about what individuals in a large pool warrant further scrutiny—at least when that scrutiny does not involve intrusive investigative measures that would require third-party approval, such as a court order.

Assuming the FBI field office in the Houston area took the first step of going to local skydiving clubs, it would have found the record, among others, for Joe Saleh. It is possible that the FBI would consider Mr. Saleh's request to rent a plane, in addition to his apparent Arab ethnicity, to be enough to warrant searching his name against the watch list and BICE records. Mr. Saleh's record also indicated that he had University of Texas student identification. Therefore, the LESC search, which includes the SEVIS database of foreign-student records, might have produced some information on Mr. Saleh. If these avenues revealed something suspicious, the FBI would do additional checks or surveillance on Mr. Saleh.

The requests for airplane rentals

If the FBI interviewed "BJ" from the Beautiful Day Skydiving Club, it would find that Mr. Saleh was attempting to rent a plane on the Saturday after Thanksgiving. This might cause the FBI to focus more attention on Mr. Saleh. They might also investigate other local companies that rent small airplanes to determine whether there were other plans for small-plane rentals at the same time that were suspicious. This could have led them to Mr. Sabril.

The credit card records

Assuming previous investigation turned up enough information to suspect Mr. Saleh, they might have obtained his credit card records, by subpoena or National Security Letter. Those records could have led the investigators to the purchase from the International Organization of Explosives Experts website of a book on explosives.

The email records and online activity

If the FBI found Mr. Saleh's letter requesting the airplane rental, it would have had an email address, which could have led it to an ISP. Still, with a generic email address, the ISP that Mr. Saleh was using would have been difficult to identify. The FBI may have been able to begin with the university server. Assuming the investigation to date had revealed sufficient suspicious behavior, the FBI could obtain a court order for email transaction records and records of online activity. These records would reveal Mr. Saleh's visits to websites about explosives.

How the government could use this information more effectively

One of the greatest challenges in using private data to assist in an investigation is narrowing the search to something that can produce a meaningful result. Traditional investigation techniques—making phone calls, asking questions—will always be critical to this process. These will turn up the facts that give investigators some information with which to query the private databases. The more data an investigator can access to do this narrowing, the more accurate the narrowing is likely to be and the less reliant on hunches, stereotypes, and ethnic profiling. Some steps to improve the ability to search government and private sector databases would assist in this narrowing process.

First, it would increase the ease with which field agents could conduct searches of government databases if there were real-time interfaces between those offices and key systems like those of the TSC and the BICE. Along with these interfaces would have to come protections for data security, guidelines for appropriate searching, and auditing technology to assist with oversight.

In addition, there might be government databases other than those of the TSC and the BICE that contain data useful for the narrowing process in this vignette. Creating locator directories of government databases would make it easier to find this data. Locator directories contain searchable pointers—like card files in a library—to where data can be found. Some private-data holders could also operate their own locator directories and make them available for searching by the government under certain circumstances. In this vignette, the FBI field office could have determined, using private sector locator directories, whether, for example, explosives manu-

facturers had any recent records on any of the names on the list of skydivers. A "yes" answer would have been a reason to keep a skydiver on the list for additional investigation.

As this vignette demonstrates, searches of aggregated public records are a powerful tool for narrowing the scope of an investigation. For effectiveness and privacy reasons, however, these searches should not be the first step investigators take to narrow a massive list of names. In addition, investigators should conduct these searches consistent with clear guidelines on, among other things, when searches may be conducted, how their results may be used, and how private data may be retained and disseminated.

Finally, there are some improvements to data availability that are too costly to recommend. For example, it would be helpful to the FBI in this vignette if records of skydiving clubs were maintained digitally in a standard format so that they can be searched. It is extremely important that state and local law enforcement and many private sector entities maintain their records digitally so those records are available for searching. There are some industries, though—and skydiving clubs are most likely among them—for which this will be far too costly. The marginal benefit to law enforcement and intelligence is unlikely to be enough to recommend federal funding support for digitizing skydiving-club data.

Appendix E

The Four Key Questions of Detection and Prevention: Who? How? Where? and When?

by Jeff Jonas and Gilman Louie

Who?

In many cases we know a "who." Our federal, state, and local government know of individuals who are not to be permitted into the U.S., who are not to be permitted on planes, who are wanted by law enforcement, etc. Once a "who" is known, the goal becomes finding him before he engages in a "how," "where," or "when."

The first order of business in protecting U.S. assets is to implement a process by which watch lists can be applied to U.S. transactional data (for example, visas or driver's licenses) in search of these individuals. Additionally, it becomes prudent to locate not only the watch list individuals, but also those closely associated with them, such as roommates, etc.

Discovering the whereabouts of a "who" allows law enforcement to determine a course of action (for example, whether to pick individuals up for questioning or surveil them). In either case the objective is to preempt a "how," "where," or "when."

One of the challenges of discovering a "who" is for the U.S. government to determine the correct name of the entity it is searching for. If we plan to make watch lists more effective, we need to have more data on an individual than just his or her name. Identity resolution is a technology that combines many different data points on an individual to determine if there is a match. This technology exists today and is being used by private sector industries.

There are more than a dozen watch lists managed by various agencies. Many of these watch lists are not available for dissemination due to security concerns. In addition, it is difficult for an organization to make sure that all of the disseminated watch lists are current, coordinated, and integrated into all of the appropriate government agencies as well as commercial databases and real-time transactional systems. We need more appropriate methods to manage, update, and unify our watch lists.

Link analysis is a set of tools that helps an analyst understand the relationships between individuals (individuals who, for example, may be related to one another through a common set of associates, may have trained at a common flight school, or lived in the same apartment). The government needs not only the tools but also the data to research and investigate potential linkages. Once again, these technologies and the required data sets exist, but the data sets must be accessible with the appropriate tools.

New technologies, similar to those being pioneered for digital rights management in the entertainment industry, are being developed. These will provide for tighter control and strong audit of the data. In addition, technologies are being developed for anonymization of the data that would enable the enforcement of privacy policies without encumbering intelligence analysis. These capabilities should be ready for deployment within 18 months.

Technologies are already being implemented to help analyze potential risk associated with individuals in near real-time. Government systems such as Computer Assisted Passenger Prescreening (CAPPS) and CAPPS II and commercial credit-analysis systems use rule-based scoring systems to assess risk. The performance of these systems is dependent on the quality of the assumptions used to build the rules, the ability of the system to resolve identities, and the quality of the underlying data. More work needs to be done in measuring the quality of data of any source as well as in the development of technologies that will improve the quality of the rules to reduce the number of false positives and false negatives.

How?

Sometimes intelligence uncovers a potential "how." When a potential "how" is known in conjunction with a "who," very specific sets of data often become of interest. Consider, for example, a threat potentially related to scuba divers. From the "detect and preempt" point of view, gaining access to a specific data set, like scuba diver licenses, can be invaluable. Identity resolution of scuba divers against watch list entities (for example, matching the

"whos") can provide excellent insight. Discovering watch list entities who are scuba divers or who are connected to scuba divers opens the door to preempting a "how," "where," or "when."

Sometimes intelligence uncovers a "how" without a "who." What clues are available then? Tactics to unravel such a plot may involve performing identity resolution against several specific data sets for the purpose of generating a "persons of interest" list. For example, if a "how" is believed to involve a passenger cruise liner, a scuba diver, and hazardous materials, it makes sense to correlate future passenger reservations, cruise line employees, scuba diver lists, hazardous materials permit holders, and government watch lists. Identity-resolution and link-analysis outcomes from this step will yield candidates.

There should be a national, or perhaps worldwide, terrorist-methods database (or databases that could be simultaneously searched) that an analyst could employ to determine strategies to prevent an attack as well as to support ongoing investigations. This methods database should include a catalog of potential threats, methods for detection, inventory of necessary components, necessary expertise of individuals to exploit threats, lists of individuals and organizations who may have access to the methods or materials, a database of known devices that currently exist or those that might have been used in the past, and a database of previous threats and attempts. The U.S. should collaborate with other friendly intelligence services to create a worldwide methods repository. There are no technology barriers to developing such a repository.

In addition to a methods database, we should create standard operating procedures for each method that can be employed by national, state, local, and commercial assets, as well as by first responders, to assist in preparedness, detection, prevention, and consequence management. To support the development of standard operating procedures, we should collect lessons learned from national, state, and local simulations of attacks, and create a national test plan. We should also deploy digital-simulation technologies to support the development of scenarios and potential responses to scenarios. These simulation tools can also be deployed for training and rehearsal. The underlying technologies for the creation of these tools exist in both defense applications and computer-gaming applications, such as the massive multiplayer games *SimCity* and *The Sims*. The application of digital-simulation technologies to support homeland defense could be developed in less than 24 months.

Where?

Knowing a "where" and a "who" or a "where" and a "how" can provide enough clues to solve the remaining plot condition. For example, a known "where" and "who" provide enough focus to select very specific data sets for analysis. If the "where" is a hotel, then comparing past guests, future reservations, employees, vendors, government watch lists, and the known "who" may very well uncover the links needed to crack the case. A broader view might include testing data from surrounding hotels and regional transportation records.

The U.S. government should have a geospatial repository, or a network of geospatial databases that should include all major structures, critical infrastructure, and any potential terrorist targets. This database should support analysts attempting to answer the questions "What's there?" and "How is it vulnerable?" Much of the data to build this repository lies not with the federal government but with state, local, and commercial repositories. We need to be able to either collect the data or access it. The good news is that there are both commercial standards and emerging open standards for geospatial data interchange. The challenge is to make the data accessible and searchable with appropriate access controls. It is also important for the government to perform a risk assessment of major commercial as well as federal, state, and local infrastructures, and moderate- to high-risk targets.

There should also be a sensor network of chemical, biological, and radiological sensors networked with traditional physical-security systems monitoring critical infrastructure and potential government and commercial targets. These sensors should be monitored by one or more network-awareness centers (NACs). We could have a national sensor grid with initial capability in less than 24 months.

These NACs should also be monitoring ongoing message traffic (both radio and data messaging) of police, fire, and medical personnel, and should have appropriate technologies to analyze these collections for patterns as well as for early warning. The technologies required to support this effort have already been built for signal intelligence and collections.

We should also be able to track most potential delivery systems (for example, aircraft, ships, large trucks, containers) by using existing commercial GPS tracking systems

and fleet data-management systems. These systems already exist for commercial-transportation management.

Similar to identity-link analysis, we need to develop technologies that support geospatial link analysis. For example, starting with a location, with or without a time reference, an analyst should be able to determine all of the high-threat individuals within an area or who have passed through a given area. The analyst should be able to determine all of the potential targets or potential areas of interest, given a profile. She should be able to identify a group of individuals and see if they have ever been physically together.

When?

Having intelligence or a predictive notion of a "when" helps significantly to reveal a plot. Each of the above examples is further scoped and focused when a specific time constraint can be added. To effectively detect a plot with a known "when," another element—whether that be a "who," "how," or "where"—is required.

There should be a national calendar that lists all of the major events with locations and audience. We should have the ability to track the travel of key individuals whom we are trying to protect as well as those who are considered high potential threats. In order to do so, we need to be able to correlate reservation, travel, and lodging data. We should also be tracking the transportation schedules of hazardous materials. Appropriate temporal and geospatial analysis and visualization tools could assist the analyst in answering the "when" question.

Appendix F

Technology Challenges for the Near Future

by Stewart Baker and Jeff Jonas

Introduction

Recent headlines about the government's technology capabilities in fighting terrorism have suggested that agencies are deploying cutting-edge data-mining capabilities that seek to identify terrorists by knowing everything about everyone. These suggestions are unfortunate in several respects. First, they grossly overestimate the government's technical capabilities, both now and in any plausible immediate future. The most ambitious effort, the Terrorism Information Awareness initiative at the Defense Advanced Research Projects Agency (DARPA), includes one project designed to explore the ability of investigators and computers to identify terrorist activity in advance by processing transactional and other information. This is highly speculative research, and there is no guarantee that it will produce useful results. Second, these suggestions distract us from understanding the government's very real lack of current capabilities and actually undercut responsible efforts to improve those capabilities. In an effort to focus attention on capabilities that the government should have—and that the government could have if it used existing data-processing technology—this paper seeks to identify a set of concrete challenges for the near future.

Finding terrorists before they strike is not unlike a high-stakes game of *Clue*. To be sure of success, the government is likely to need information about the identities of the terrorists, the weapons they plan to use, and the location they intend to strike—who, how, and where. We have identified a series of capabilities that seeks to improve the government's ability to answer each of these questions. These are capabilities that the federal government can and should develop in the near term (less than five years) to bring our data-processing capabilities to bear on the problem of terrorism. These capabilities focus principally on the federal watch lists and the use of data currently in private hands to allow civil authorities to locate and pursue suspected terrorists within our borders. All of these capabilities are achievable with resources and technology now available or in development. Indeed, many are currently in use by private industry. Using them in an integrated fashion could enhance our safety in a manner consistent with current law while also taking into account concerns about privacy and civil liberties. Privacy concerns that go beyond the protections of current law should be addressed not by denying the government the ability to use technology or by imposing new legal restrictions on government investigations of terrorism, but by using technology to enforce accountability and reduce or eliminate access to data unrelated to terrorism. Proposals for such a use of technology are being prepared by other task forces.

Who?

By far the most productive approach to preventing terrorism is identifying terrorists before they strike. Therefore, the greatest number of challenges focuses on this problem, which can be subdivided into two categories: locating suspected terrorists and detecting when a suspected terrorist is operating under a false identity.

Challenge 1: Finding known terrorists and associates operating in the U.S.

When a counterterrorism agency knows the identity of a suspected terrorist, it should be able to determine whether the terrorist is in the country. Data searches need to be conducted in an attempt to locate that person on an ongoing basis, using phone listings (published and unpublished), DMV records, basic financial indicators (as already used by database marketers), Immigration and Naturalization Service (INS) visitor and immigration information, academic enrollment, special licenses, and travel records. Within 30 seconds, the counterterrorism agency should also be able to access U.S. and international financial records associated with the suspect.

Counterterrorism officers should be able to identify known associates of the terrorist suspect within 30 seconds, using shared addresses, records of phone calls to and from the suspect's phone, emails to and from the suspect's accounts, financial transactions, travel history and reservations, and common memberships in organizations, including (with appropriate safeguards) religious and expressive organizations.

Rationale

On August 26, 2001, two weeks before the hijackings, the Federal Bureau of Investigation (FBI) received unequivocal word that two of the hijackers were in the country and were associated with a "major-league killer" in Al Qaeda. Despite having two weeks to find them and their associates, the FBI failed. There were two principal reasons for this failure. The first was an unwillingness to use law enforcement resources in the search, due to the wall between law enforcement and intelligence, both inside and outside the agency. The second was an inadequate technical capability that made tracking the two hijackers difficult, despite the fact that they were living under their own names, were listed in the phone book, had driver's licenses, and shared a variety of travel information with their air carriers. They were, in short, eminently findable. And once found, a search of other private databases (for example, airline systems) would have turned up links to many of the other hijackers. Done promptly, such searches might have stopped the attacks. It may be inappropriate to blame the government for not having in place a system for finding a conspiracy with such an unexpected goal. But Al Qaeda's goals are no longer unexpected, and the next time they attack we may not have two weeks. The government must implement procedures that will at a minimum prevent failures such as those in the past. This is not enough, but it is the first thing that must be done.

The technology to meet these challenges is already in existence. Indeed, versions of the technology are already in use in some industries, such as the gambling industry (see Appendix G). The technical challenge, which cannot be underestimated, is to bring the capabilities of counter-terrorism agencies up to the capabilities of private industry so that American lives receive the same protection as the business interests of the private sector.

The challenge includes a requirement that investigators be able to use information about membership in organizations, including religious and expressive organizations, when examining a known subject. Denying investigators access to such information is not the answer to civil-liberties concerns. The American commitment to equality is not violated by observing that many of the 1993 World Trade Center bombers were linked through a common religious leader. Nor is it a violation of civil liberties to notice that those who belong to an organization advocating "Death to America" are more likely to be planning the deaths of particular Americans than members of an organization devoted to highway beautification. At the same time, it is possible to misuse such information. Safeguards should be designed against improper access to such information—"pretext" searches and the like. Safeguards should also be designed to discourage improper use of the information. These safeguards may include careful authentication of users, audits of the data accessed, and scrutiny of unusual search patterns by users of the system.

Required technologies and infrastructure

1. Active watch list program
2. Connectivity between key data holders
3. Data-sharing guidelines, policies, and procedures
4. Identity recognition
5. Immutable audit
6. Link analysis
7. Locator directories

Challenge 2: Foreign-student accountability

The government should be able to search, in real time, records showing the status and locations of foreign students, including prospective and former students, research assistants, and teachers in programs that raise terrorism concerns.

Rationale

Many of the hijackers of September 11 came to the U.S. on student visas. But many student-visa holders do not show up, or soon abandon their studies, or overstay their visas. Of equal concern are the students who are here to learn skills that will be used to kill Americans.

Required technologies and infrastructure

1. Connectivity between key data holders
2. Data-sharing guidelines, policies, and procedures
3. Identity recognition
4. Immutable audit
5. Locator directories

Challenge 3: Enabling local law enforcement with watch lists

Local police checking driver's licenses or license plates should, in most cases, be automatically alerted when they run the documentation of a terrorist suspect. However, the watch list database should not be easily reconstructed by local police agencies, and the alert should be tailored to the circumstances of the suspect and the stop.

Rationale

Local law enforcement is an essential element of antiterrorist strategy, but integrating local agencies into federal data capabilities is a complex matter. Local police had several interactions with the September 11 hijackers while they were in the U.S. Assuming that we are doing a better job of sharing information about terrorist suspects now believed to be operating in the U.S., local police are the most likely to encounter the suspects. Integrating identity checks performed by local police with federal suspect lists is thus a priority.

While providing access to counterterrorism databases is a challenge, it is not technically demanding. Here, the more difficult problem will be to build the safeguards. A single database that can be accessed by every law enforcement agency in the country will not likely be secure and thus will not likely contain the most important and sensitive information. An effective system must, therefore, include strong safeguards to ensure accountability, audits, pattern reviews of searches, and similar protections. The good news about this challenge is that the same technical capabilities that must be developed to meet the challenge can also be used to prevent other forms of misuse, including abuses of civil liberties and privacy.

Required technologies and infrastructure

1. Active watch list program
2. Anonymized data, sharing, and analytic correlation
3. Connectivity between key data holders
4. Data-sharing guidelines, policies, and procedures
5. Identity recognition
6. Immutable audit
7. Link analysis

Challenge 4: Creation of a consolidated watch list

The government should have a consolidated list of terrorism suspects that includes the different lists that have been assembled by different agencies for different purposes.

Rationale

Once again, the most difficult challenge here may turn out to be the problem of maintaining a highly sensitive list without having its contents end up on bulletin boards in every Customs back office. The safeguards designed to make sure the list is not accessed directly or improperly may also serve privacy interests.

Other challenges concern the problem of how to avoid being swamped with false positives. These can call the system into disrepute while also weakening security. For example: Simply placing "David Nelson" on a watch list of people who are banned from flying causes every David Nelson in the country to be stopped at the airport. Safeguard mechanisms are likely to include an ability to immediately recognize that the 71-year-old David Nelson from Oregon is not the "no fly" David Nelson, so that the same list of questions and background checks are not needed before every flight to conclude that the Oregon David Nelson is free to fly.

Required technologies and infrastructure

1. Active watch list program
2. Anonymized data, sharing, and analytic correlation
3. Connectivity between key data holders
4. Data-sharing guidelines, policies, and procedures
5. Identity recognition
6. Immutable audit
7. Link analysis
8. Locator directories

Challenge 5: Watch list development and sharing policies

Watch lists should be updated in an accountable fashion on a real-time basis.

Rationale

Watch lists must conform to a standard process that clarifies how names get on and off these lists. Then, as list holders make changes, these same changes must be instantly transferred to the centralized watch list. In turn, the updates to the centralized watch list must be disseminated to watch list subscribers.

Required technologies and infrastructure

1. Active watch list program
2. Data-sharing guidelines, policies, and procedures
3. Immutable audit

Challenge 6: Detecting false and stolen identities

Both the government and the private sector should be able to identify false identities in real time when vetting employees

or preparing to engage in a material transaction—opening a bank account, making a cruise-ship reservation, providing a pilot's license, etc. This necessitates, for example, checking identities against death records for individuals (usually children who have died young enough to avoid acquiring a social security number) whose identities might be used to generate a false identity and flagging improbable identities, such as that of a 35-year-old with unusually few public records (for example, no phone book records, no credit-header files, no driver's license).

Rationale

Our most effective systems for investigating and protecting against possible terrorists depend on knowing the identities of suspects. But if identities are easy to forge, the government is forced quickly back into the position of treating everyone as a suspect, with unfortunate consequences for civil liberties. Thus, it is important to find ways to reduce opportunities for false identities. The capabilities identified in this challenge have been available to Western European governments for many years, and it is embarrassing that the U.S. hasn't yet automated them, despite the use by several September 11 hijackers of false identity papers.

Required technologies and infrastructure

1. Connectivity between key data holders
2. Identity recognition
3. Immutable audit
4. Locator directories
5. Real-person validation

How and where?

Sometimes we will not know the identities of possible terrorists but will have some idea of their plans, locations, and activities. Perhaps the most demanding challenge is finding ways to identify terrorists based on knowing little more than a potential target or threat.

Challenge 7: Accessing data about people in response to a credible methodology threat

When the government develops a credible new concern about a possible terrorist methodology—the intent to use a hazmat tanker in suicide attacks, for example, or scuba attacks against a specific port—it should be able to selectively request and receive data sets of specific interest associated with the threat. For example, it should be able to compare a list of persons with hazmat or scuba licenses against watch lists and other data sets that may give rise to concerns, such as travel, origin, or communications with foreign countries that are sources of terrorism; association with other terrorism suspects; and the like.

Rationale

As with the first challenge, this need grows out of the circumstances of September 11. An FBI agent in Phoenix raised the possibility that terrorist suspects were disproportionately enrolling in flight schools. No search was performed of flight-school records, perhaps for fear of charges of ethnic or religious profiling, but largely because of the difficulty of conducting rapid, efficient searches to test hypotheses about possible terrorist plots. While such a hypothesis is not a basis for assembling files on every scuba diver in the country, a review that located and flagged scuba divers who have overstayed a Yemeni visa and have bank accounts that are replenished regularly from foreign sources is an important capability that should be available on a decentralized basis so as to allow decentralized hypothesis-testing by agents in the field. The ability to conduct a "virtual background investigation" on individuals—most of whom will have nothing to do with terrorism—also requires safeguards. In addition to accountability safeguards of the sort identified above, it would be prudent to design systems that maintain practical anonymity for the subjects of such reviews. That is, it should be possible to conduct a background investigation of hazmat-license holders without maintaining or even allowing human review of the information unless the investigation turns up other indicia of concern such as the factors described above. Identifying the indicia of concern is not a simple or a one-time matter. Extensive contacts with Middle Eastern countries, an attachment to Islamic fundamentalism, and foreign travel to countries associated with terrorism are all indicia of concern today and for the foreseeable future, but as Al Qaeda steps up its nontraditional recruiting to avoid these indicia, others may have to be added. The Padilla case suggests that prison time, particularly prison time combined with conversion to Islam, should be an indicium of concern. Other indicia may need to be kept confidential. It may be appropriate to develop scoring mechanisms that do not identify the particular indicia that contributed to the score but that simply order the data to identify the people who should be examined more closely first.

Required technologies and infrastructure

1. Active watch list program
2. Anonymized data, sharing, and analytic correlation
3. Connectivity between key data holders
4. Data-sharing guidelines, policies, and procedures
5. Identity recognition
6. Immutable audit
7. Link analysis
8. Locator directories

Challenge 8: Accessing resource and infrastructure data specific to a credible methodology threat

The government should be able to respond to reports of a particular mode of attack (for example, a plan to use chlorine tanker trucks to attack office buildings in several cities) by gaining access within four hours to private sector data relating to the status of that mode (for example, to obtain available information from industry sources about the location, status, drivers, and contact information for chlorine tankers).

Rationale

This challenge assumes that counterterrorism agencies will have to guard against a specific threat without knowing who will carry out the threat. In many cases, it will be possible to locate all sources of threat information much more quickly than within four hours. Presumably, if the government had been aware that a suicide hijacking was planned for the immediate future, the Federal Aviation Administration (FAA) would have been able to identify in less than four hours all flights scheduled for departure on September 11, 2001. But not all industries are as regulated or centralized as the airline industry, and elaborate information-sharing mechanisms are not likely to be cost-effective in many circumstances. Instead, the government needs standby mechanisms for rapidly gaining access to such information when a particular threat is identified. This means tools, links, organizational contacts, and knowledge about the kinds of data maintained by chemical companies, nuclear plants, truckers, petroleum companies, railroads, and the like. The government also needs a mechanism for keeping these tools, links, and facts up to date, a task that is achievable—but only if the government makes the effort to identify the data of particular importance in an emergency and limits its data requirements to only that data.

Required technologies and infrastructure

1. Connectivity between key data holders
2. Critical-infrastructure risk assessment
3. Data-sharing guidelines, policies, and procedures
4. Distributed environmental-sensor web
5. Geospatial and event query support
6. Major-events calendar
7. Terrorist-methodologies database with threat profiling
8. Threat-scenario simulation
9. What/where recognition

Challenge 9: Alerts of suspect international cargo containers

The U.S. should be able to determine the past history—cargo and itinerary—of containers bound for its ports, and should be able to identify suspicious patterns before those containers reach American waters.

Rationale

Containerization has revolutionized world shipping. But its ubiquity could also become a serious hazard in an age of weapons of mass destruction. In fact, substantial information about containers is gathered at every stage of the container's progress, but this information has not been stored in an accessible fashion or transmitted across national boundaries. Concerted U.S. leadership could end this gap in our data capabilities and also provide a new tool for identifying potential weapons before they reach our shores.

Required technologies and infrastructure

1. Connectivity between key data holders
2. Critical-infrastructure risk assessment
3. Data-sharing guidelines, policies, and procedures
4. Distributed environmental-sensor web
5. Geospatial and event query support
6. Identity recognition
7. Link analysis
8. Terrorist-methodologies database with threat profiling
9. Threat-scenario simulation
10. What/where recognition

Challenge 10: Detection of terrorist-sponsored money-laundering activities

Financial institutions conducting anti–money-laundering reviews should be able to identify account holders whose finances reflect such indicia of concern as irregular deposits from overseas. It should also be possible to review the background of such account holders on a rapid basis for other indicia of concern.

Rationale

U.S. law now requires extensive information-gathering and -processing by financial institutions of anti–money-laundering data designed to locate terrorist financing. But there is considerable uncertainty among financial institutions about how to identify financial patterns associated with terrorism. And in many cases, a review of financial information can only begin the analysis; it will be necessary to review data from other sources to confirm or rebut suspicions raised by anti–money-laundering scrutiny. While terrorist financing is a potential source of effective counterterrorism action, it must be focused and integrated with other data to succeed.

Required technologies and infrastructure

1. Active watch list program
2. Connectivity between key data holders
3. Data-sharing guidelines, policies, and procedures
4. Identity recognition
5. Immutable audit
6. Link analysis
7. Locator directories
8. Terrorist-methodologies database with threat profiling
9. Transactional-pattern analysis

Challenge 11: Accessing geographic data specific to a credible location threat

Sometimes intelligence may only be able to produce a "where"-related threat (for example, a scenario in which a major sporting event at a specific stadium is believed to be a target). In this case, data must be accessible that enables analysts to rapidly assess the threat and hunt for other corroborating evidence or activity, including potential relationships to any watch list entities.

Required technologies and infrastructure

1. Active watch list screening
2. Connectivity between key data holders
3. Critical-infrastructure risk assessment
4. Data-sharing guidelines, policies, and procedures
5. Geospatial and event query support
6. Identity recognition
7. Immutable audit
8. Link analysis
9. Locator directories
10. Major-events calendar
11. Terrorist-methodologies database with threat profiling
12. Transactional-pattern analysis
13. What/where recognition

Challenge 12: Prompt response to actual incident

The government should have the ability to locate critical infrastructure nodes in the vicinity of an attack within five minutes—pipelines, power-generation plants and transmission lines, communications facilities, transportation, and the like. The impact of a major attack could include much more than the immediate casualties if the responding agencies are not able to respond with full knowledge of nearby facilities that may pose a threat or provide resources. These facilities should be identified once—not multiple times by multiple agencies at the federal, state, and local levels—and their identities made available to first responders in a method that does not expose the information to public (and therefore possible terrorist) access.

Required technologies and infrastructure

1. Connectivity between key data holders
2. Convergence of emergency communication systems
3. Critical-infrastructure risk assessment
4. Data-sharing guidelines, policies, and procedures
5. Distributed environmental-sensor web
6. Geospatial and event query support
7. Major-events calendar
8. Terrorist-methodologies database with threat profiling
9. Threat-scenario simulation
10. What/where recognition

Appendix G

Technologies Required to Meet the Challenges

by Jeff Jonas and Gilman Louie

Introduction

In "Technology Challenges for the Near Future" (Appendix F), we present 12 scenarios to illustrate technologies, infrastructures, and related data issues that will be instrumental in enhancing our national security. The overall requirements are reduced here to a finite number of specific enabling technical capabilities. In the chart below, these capabilities are presented in alphabetical order, so as to enable the reader of "Technology Challenges for the Near Future" to find the description, availability, and best-case time frame for implementation of each capability. The capabilities are then organized into three prioritized phases of implementation.

This document supports the optimistic position that many requirements to improve national security can be met by existing technologies, and that it is possible to implement these technologies in very short order. In reality, the challenges will essentially be tied to changing culture and consensus regarding guidelines and policies.

Required technology and infrastructure

How to read this chart

Capability: This value is for the technical capabilities we described in Appendix F as necessary to enhance our national security.

Availability: This value is the amount of time it might take in a perfect world, and with appropriate funding, to make the technology useable for the intended mission. As can be seen, the majority of these capabilities are already available.

Best-case time frame for implementation: This value provides a time frame for actual implementation as measured in months or years. These time frames are for implementation in a limited fashion in the most relevant areas and for delivery of some immediate enhancement to national security.

CAPABILITY	AVAILABILITY	BEST-CASE TIME FRAME FOR IMPLEMENTATION
Active watch list program Ability to aggregate various federal, state, and local watch lists into a single repository (the centralized watch list must be kept current with source systems, and the data on it must be able to be securely queried and securely disseminated); access audits and policies on how names get on and off each type of watch list required	Available	6 to 12 months
Anonymized data-sharing and analytic correlation Ability to convert actual data values to anonymous values before data is shared between parties; recipients of anonymized data must be able to perform analytical processing against anonymized data	3 to 9 months	6 to 18 months

CAPABILITY	AVAILABILITY	BEST-CASE TIME FRAME FOR IMPLEMENTATION
Connectivity between key data holders Including the ability to sustain real-time interfaces between key systems at federal and state offices (for example, the Bureau of Citizenship and Immigration Services and the FBI); ability to connect government systems with data aggregators for real-time information requests and responses; ability to sustain real-time interfaces with enterprise-class organizations, which have highly automated, high-volume transactional systems; ability to support at least batch interfaces with highly autonomous, independent, noncentralized organizations engaging in transactional activity	Aggregator connectivity: Available Government connectivity: 6 to 12 months Enterprise-class connectivity: Available Independent-organization connectivity: Available	Aggregator connectivity: 3 to 36 months (challenges include data security, policy, and culture) Government connectivity: 12 to 24 months Enterprise-class connectivity: 6 to 12 months Independent-organization connectivity: 12 to 24 months (only practical on a very selective basis)
Convergence of emergency communication systems Ability for first responders, operators, and facility managers of critical infrastructure and high-risk targets to communicate via integrated and interoperable platforms	Available	1 to 5 years
Critical-infrastructure risk assessment Including the creation of reporting standards for critical-infrastructure locations, inventory, vulnerabilities, practices, and anomaly reporting; creation of a central repository containing up-to-date critical-infrastructure reports enabling vulnerability assessments, analytics, and hypothesis exploration; and the ability to assess and rank critical-infrastructure risks based on a centralized critical-infrastructure repository, terrorist-methodologies database, and threat-scenario simulations—all of which must include the related visualization tools to interact with the data	Technology: Available Reporting standards: 3 to 5 years (very difficult)	Limited coverage: 1 to 5 years or more
Data-sharing guidelines, policies, and procedures Ability to develop agreements between data creators and data users concerning policies and procedures for sharing highly protected intellectual property; must include policy and standards for digital-rights management, encryption, anonymization, reporting, currency, connectivity, synchronization, and precedence rules	Available	1 to 10 years
Distributed environmental-sensor web Ability to deploy and integrate network-robust environmental sensors for weather, wind, biological, chemical, and nuclear information	Available (with the exception of biological)	3 to 5 years

CAPABILITY	AVAILABILITY	BEST-CASE TIME FRAME FOR IMPLEMENTATION
Entity extraction from unstructured data Ability to locate and extract "who," "what," "where," and "when" values from unstructured text (for example, letters and newspapers) with a reasonable level of accuracy and little to no human intervention	Available (at a reasonable level of accuracy)	In progress
Geospatial and event query support Ability to query critical infrastructure databases, resource databases, threat databases, terrorists, suspects, etc. on the basis of a geospatial area; must include the related visualization tools for interacting with the data	Available	12 to 24 months (dependent upon collection of appropriate data)
Identity resolution Ability to recognize when two individuals or organizations are the same across data sources, despite disparity (for example, poor data quality or obfuscation); required to raise the fidelity of watch list data and transactional data, which in turn reduces false positives and false negatives	Available	In progress
Immutable audit Ability to maintain detailed audit logs that are highly tamper-resistant (including data authors, maintenance changes, system queries, and query responses) and that are stored for after-the-fact analysis and integration of real-time trip wires	3 to 9 months	12 to 36 months
Link analysis Ability to connect people or organizations based on common attributes (for example, address or phone number) to watch list identities at one or more degrees of separation; must include the related visualization tools for interacting with the data	Available	In limited use
Locator directories Ability to create locator directories (locator directories contain pointers to where data can be found)	Available	12 to 18 months
Major-events calendar Ability to create a centralized collection of major events (for example, holidays, sporting events, and concerts), which could provide analysts with critical information to correlate with threat intelligence and input for threat-scenario simulations	Available	6 to 36 months

CAPABILITY	AVAILABILITY	BEST-CASE TIME FRAME FOR IMPLEMENTATION
Real-person validation Ability to confirm that individuals presenting themselves are who they say they are; required to prevent access to secure areas by those using false or stolen identities	False identities: Available Stolen identities: 6 to 12 months (true solution requires biometrics)	False identities: 6 to 12 months Stolen identities (with biometrics): 3 to 10 years
Terrorist-methodologies database with threat profiling Ability to develop a terrorist-methods database (including required resources, expertise, known targets, known terrorist skills, etc.) that will support behavioral profiling of terrorists; and ability to develop a model or signature (for example, a large purchase of ammonia nitrate and rental of a moving truck) that might suggest future intent; must include the related visualization tools for interacting with the data	Some available, but further research needed	5 or more years
Threat-scenario simulations Ability to use digital-simulation technologies for training, test plans, simulated outcomes, rehearsal, etc., in efforts to avert an event; must include the related visualization tools for interacting with the data	12 to 24 months	18 to 36 months
Transactional-pattern analysis Ability to integrate geospatial, temporal, and event data that can be used to generate alerts and enable analysts to query for specific hypotheses; must include the related visualization tools for interacting with the data	Somewhat available (lack training patterns for terrorism)	2 to 5 years
What/where resolution Ability to resolve disparate data that describes the same object (what) or place (where)[1]	"What" resolution: Very limited availability based on subject area "Where" resolution: Moderate availability	"What" resolution: 3 to 5 years "Where" resolution: 12 to 18 months

[1] While identity resolution solves the challenging problem of understanding when two people are the same, similar capabilities are required to resolve object/what or place/where data. For example, chlorine might appear in scientific data in any one of these forms: (1.) Name_Chlorine; (2.) Atomic Number: 17; (3.) Atomic Symbol: Cl; (4.) Atomic Weight: 35.453; or (5.) Electron Configuration: $[Ne]3s^2 3p^5$. "Where" resolution would need to establish, for example, that the following locations are one and the same: (1.) the Stafford Building; (2.) 1104 48th Street; (3.) the S.E. corner of Stafford and Vine; and (4.) Starbucks location #246.

Priorities for technology implementation

We believe all of these capabilities are urgently needed. However, knowing there must be some prioritization for focus, we have organized the capabilities into three phases. These priorities were developed with consideration of the following general characteristics: criticality to national security, criticality to privacy and civil liberties, and potential for timely implementation.

PHASE 1: OPERATIONAL WATCH LISTS (WHO)

1. Anonymized data-sharing and analytic correlation
2. Active watch list program
3. Connectivity between key data holders
4. Data-sharing guidelines, policies, and procedures
5. Identity recognition
6. Link analysis
7. Real-person validation

PHASE 2: ENHANCED ANALYTICS (WHAT, WHERE, WHEN)

1. Entity extraction from unstructured data
2. Geospatial and event query support
3. Immutable audit
4. Locator directories
5. Major-events calendar
6. Transactional-pattern analysis
7. What/where resolution

PHASE 3: INFRASTRUCTURE MONITORING, DISASTER RECOVERY, AND SIMULATION

1. Convergence of emergency communication systems
2. Critical-infrastructure risk assessment
3. Distributed environmental-sensor web
4. Terrorist-methodologies database with threat profiling
5. Threat-scenario simulations

These capabilities should be worked on now so that they can be ready in coming years.

Appendix H

The Landscape of Available Data

by Jeff Jonas

Introduction

The purpose of this appendix is to present the types of data that exist as a byproduct of our digital economy. This chart below should not be viewed as a comprehensive reference work, but rather as a sketch of existing digital data. While much of this data is not generally shared by its holders, its existence reveals the fact that the landscape of available data is rather rich. It is hoped that as guidelines and policies are considered, this chart will be of assistance by presenting the big picture of existing data and usage.

Data available in the U.S.

How to read this chart

Data source: This value represents general life events, actions, industries, etc., from which data is generated. We included 26 data sources.

Record: This value represents types of documents that are generated from the corresponding data source.

Domain: This value represents the availability of the corresponding record as follows: "free" (available via the Internet or made available upon request to its collector); "public" (government data that is considered public record and is generally available without restriction); "for purchase"; "for limited use" (subject to use restrictions consistent with state or federal law); and "private" (generally not for sale under any circumstance, unless a person gives express consent—for example, an authorization to pull a credit report during a loan application).

Class: This value defines the nature of the record as follows: "PII" (data that contains personally identifiable information, such as a name, address, or phone number); and "transactional" (data acquired by means of a transaction, such as the purchase of flying lessons). PII data often spells out an action ("has subscribed to a magazine") or status ("has pilot's license"). For the purposes of our chart, the term "transactional" implies that each transaction is associable to a specific person.

Some organizations with centralized access: This value is for organizations that possess either aggregated data from the corresponding record or connectivity to such data. Where this field is blank, it should not be inferred that no such organization exists. In such cases, we were simply unable to find such an organization. Also, while not indicated on our chart, there are differing degrees of latency in the data at various aggregation points. For example, bad debt, initially documented by a credit grantor, is often reported months after the fact to credit-reporting agencies. Those agencies, in turn, provide the information to other aggregators on a weekly, monthly, or, even quarterly basis (the frequency depends on the aggregator's relationship with its credit-bureau supplier).

DATA SOURCE	RECORD	DOMAIN	CLASS	SOME ORGANIZATIONS WITH CENTRALIZED ACCESS
Births, deaths, and marriages	Birth certificate	Private	PII	VitalChek
	Death certificate	Public	PII	Social Security Administration
	Divorce papers	Public, or for limited use (varies by state)	PII	VitalChek
	Marriage certificate	Public, or for limited use (varies by state)	PII	VitalChek

DATA SOURCE	RECORD	DOMAIN	CLASS	SOME ORGANIZATIONS WITH CENTRALIZED ACCESS
Communications	Calling-card log	Private	Transactional (often without PII reference)	
	Cellular geo-positional locator	Private	Transactional	Cellular carriers
	Internet chat-room dialogue	Private	Transactional	AOL, MSN, Yahoo, CompuServe, and EarthLink
	Email-account directory	For purchase	PII	411.com
	Email	Private	Transactional	AOL, MSN, Yahoo, CompuServe, and EarthLink
	Express-mail form	Private	PII and Transactional	USPS, FedEx, UPS, and Airborne Express
	Instant message	Private	Transactional	AOL, MSN, Yahoo, CompuServe, and EarthLink
	ISP subscriber list	For limited use	PII	
	Page or text message	Private	Transactional	AOL, MSN, Yahoo, CompuServe, and EarthLink
	Phone call	Private	Transactional	Phone carriers
	Prepaid phone card	For limited use	PII	Amdocs (toll calls), phone carriers
Corporations	Business license	Public	PII	ChoicePoint
	Corporate officer and director lists	Public	PII	Edgar
	SEC filing (for example, a 10Q or 10K)	Public	PII	Edgar
Courts, county recorders, and secretaries of state	Bankruptcy records	Public	PII	Banko, ChoicePoint, TransUnion, Equifax, and Experian
	Eviction notice	Public	PII	ChoicePoint
	Lien	Public	PII	Banko, NDR, TransUnion, Equifax, and Experian
	Pleading, motion, complaint, judgment, order, and other civil recordings or filings	Public	PII	Westlaw[1]
	UCC filing	Public	PII	ChoicePoint
Credit and banking industries	Credit card application	Private	PII	
	Documentation of credit card issuance	For limited use	PII	VISA, MasterCard, and American Express

[1] U.S. Supreme Court, Circuit Court, Court of Appeals decisions, and reported district cases from State Supreme and Appellate Court decisions can be purchased from Westlaw. Generally, courts are quite far behind in records automation. Some data aggregators have some PII data related to certain county court abstracts.

DATA SOURCE	RECORD	DOMAIN	CLASS	SOME ORGANIZATIONS WITH CENTRALIZED ACCESS
Credit and banking industries (cont.)	Credit card transaction report	For limited use	Transactional	VISA, MasterCard, American Express, and First Data Corp.
	Credit report derogatory line	Private	Transactional	TransUnion, Equifax, and Experian
	Credit report header	For limited use	PII	Equifax, Experian, ChoicePoint, and Lexis-Nexis
	Credit report inquiry line	Private	Transactional	TransUnion, Equifax, and Experian
	Credit report trade line	Private	Transactional	TransUnion, Equifax, and Experian
	Debit card transaction report	For limited use	Transactional	
	Fraud-protection registry (self-enrolled)	For limited use	Transactional	TransUnion, Equifax, and Experian
	Loan application	For limited use	PII	
	Loan-issuance documentation	For limited use	PII	TransUnion, Equifax, and Experian
Education	Academic-institution records	For purchase	PII	List brokers
	Educator records	For purchase	PII	List brokers
	Enrollment records	For limited use	PII	
	Alumni list	For limited use	PII	Classmates.com
Entries and exits (U.S.)	Border entry and exit records	For limited use	PII and transactional	BCIS I-94s
	Passport	For limited use	PII	BCIS
	U.S. visa application	For limited use	PII and transactional	DOS's Consolidated Consular Database
	Visa	For limited use	PII and transactional	BCIS
Import and export	Container shipment record	For purchase	PII and transactional	PIERS
	Crew registration	For limited use	PII	
	Ship registration	For purchase	PII	List broker
Insurance	Claim	For limited use	Transactional	ChoicePoint

DATA SOURCE	RECORD	DOMAIN	CLASS	SOME ORGANIZATIONS WITH CENTRALIZED ACCESS
Insurance (cont.)	Policy application	For limited use	PII	ChoicePoint
	Policy	For limited use	PII	ChoicePoint
Internet	File downloads	For limited use	Transactional	AOL, MSN, Yahoo, CompuServe, and EarthLink
	File postings	For limited use	Transactional	AOL, MSN, Yahoo, CompuServe, and EarthLink
	Online purchases	For limited use	Transactional	eBay, Amazon, and Travelscape
	Website search history	For limited use	Transactional	AOL, MSN, Yahoo, CompuServe, Google, AltaVista, MapQuest, and eBay
	Web-page-hits record	For limited use	Transactional	AOL, MSN, Yahoo, CompuServe, and EarthLink
	Domain-name registrations	Free	PII	Atriks and Internic
Licensing	Aircraft owner documentation	Free	PII	List brokers and ChoicePoint
	Automobile registration	For limited use	PII	Experian and ChoicePoint
	Flight-instructor license	Free	PII	List brokers
	Scuba-diving certification	For limited use	PII	Scuba-certification organizations PADI, NAUI, SSI/NASDS, SDI, and YMCA
	Concealed-weapons permit	Public or Limited (by state)	PII	ChoicePoint
	Commercial or noncommercial driver's license	For limited use	PII	ChoicePoint
	Driving record	For limited use	Transactional	DMV
	Fishing license	Public or for limited use (by state)	PII	ChoicePoint
	Gun background check	For limited use	PII	ATF
	Hazardous-material license	Public	PII	ChoicePoint
	Hunting license	Public or for limited use (by state)	PII	ChoicePoint
	Pilot's license	Public or for limited use (by state)	PII	List brokers and ChoicePoint

DATA SOURCE	RECORD	DOMAIN	CLASS	SOME ORGANIZATIONS WITH CENTRALIZED ACCESS
Licensing (cont.)	Trucking permit	Public or for limited use (by state)	PII	PermitVision
	Weapons permit	Public or for limited use (by state)	PII	ChoicePoint
Lifestyle interest	Cable-viewing history	Private	Transactional	
	Library-materials user records	Private	Transactional	
	Magazine or newspaper subscription	For purchase	PII and transactional	Acxiom
	Online-group records	For limited use	Transactional	AOL, MSN, Yahoo, CompuServe, and EarthLink
	Internet opt-in news sources	For limited use	Transactional	AOL, MSN, Yahoo, CompuServe, and EarthLink
	Product activation	For purchase	PII	
	Product purchase or registration warranty card	For purchase	PII	Acxiom
	Video rental	Private	Transactional	
Loyalty and affinity rewards programs	Grocery store loyalty-program record	For limited use	PII	
	Loyalty-based transaction record (cash-only, etc.)	For limited use	Transactional	
	Travel loyalty-program record (airline, rental car, hotel, train, etc.)	For limited use	PII	Global distribution systems Galileo, Sabre, WorldSpan, and Amadeus; and central reservation systems Airline Automation Inc., and Cendant
Marketing	Cluster-code flag	For purchase	Transactional	Marketing data aggregators Acxiom and MITI
	Income-indicator flag	For purchase	Transactional	Acxiom and MITI
	Presence-of-children flag	For purchase	Transactional	Acxiom and MITI
	Purchasing-power flag	For purchase	Transactional	Acxiom and MITI
Medical	Drug prescription	For limited use	PII	IMS
	Infectious-disease record	For limited use	PII	InfoUSA
	Laboratory results	For limited use	PII	
Memberships	Labor association records	For limited use	PII	

DATA SOURCE	RECORD	DOMAIN	CLASS	SOME ORGANIZATIONS WITH CENTRALIZED ACCESS
Memberships (cont.)	Political organization records	For limited use	PII	
	Recreational club records	For limited use	PII	
	Religious or expressive organization records	For limited use	PII	
	Technical association records	For limited use	PII	
	Trade association records	For purchase	PII	List brokers
Open-forum meeting	Conference attendee list	For purchase	PII	Reed Elsevier
	List of conference speakers	For purchase	PII	Reed Elsevier
Open source	News story	Free	Transactional	Lexis-Nexis
	Press release	Free	Transactional	Lexis-Nexis
	Published research paper	Free	Transactional	Lexis-Nexis
People	Competition record	Free	PII	Online competition results by association or club
	List of distinguished persons	For purchase	PII	Who's Who Registers
	Lists of executives	For purchase	PII	
	Professionals lists	For purchase	PII	
Politics	Political contributions	Public	PII	FECInfo/tray.com's Political Moneyline
	List of politicians	For purchase	PII	List brokers
	Voter registration	For limited use	PII	Aristotle's Voter-ListsOnline.com
Postal	National Change of Address (NCOA)	For limited use	Transactional	USPS and Group 1
	Post-office and mail-drop box owners	Private	PII	USPS
Preemployment	Job applications	For limited use	PII	Monster.com
	Employment-history records	For limited use	Transactional	TALX (25% of U.S. work force), ChoicePoint
	Drug-test results	Private	Transactional	
Real property	Property deed	Public	PII	ChoicePoint

DATA SOURCE	RECORD	DOMAIN	CLASS	SOME ORGANIZATIONS WITH CENTRALIZED ACCESS
Real property (cont.)	Property ownerships	Public	PII	ChoicePoint
Travel and transportation	Air travel itineraries	Private	PII and transactional	Galileo, Sabre, WorldSpan, and Amadeus
	Airport parking license plates	For limited use	Transactional	
	Buses	For limited use	PII and transactional	
	Cab pick-up requests	For limited use	PII and transactional	
	Car rentals	For limited use	PII and transactional	Galileo, Sabre, WorldSpan, and Amadeus
	Cruise ship reservations	For limited use	PII and transactional	Galileo, Sabre, WorldSpan, and Amadeus
	Hotel reservations, check-ins, and folios	For limited use	PII and transactional	
	Intersection traffic vehicles	For limited use	Transactional	
	Parking privileges	For limited use	Transactional	
	Toll road auto-pay enrollments	For limited use	PII	
	Toll road auto-pay transactions	For limited use	Transactional	Galileo, Sabre, WorldSpan, and Amadeus
	Train itineraries	For limited use	PII and transactional	
Utilities	Beeper/pager subscribers	For limited use	PII	
	Cable customers	For limited use	PII	
	Garbage-collection customers	For limited use	PII	InfoUSA
	Phone books	For purchase	PII	Qsent
	Phone subscribers	For limited use	PII	
	Power customers	For limited use	PII	
	Water and sewer connections	For limited use	PII	List brokers
Work force	Airframe/power plant mechanics	Free	PII	TSA
	Airline employees	For limited use	PII	

DATA SOURCE	RECORD	DOMAIN	CLASS	SOME ORGANIZATIONS WITH CENTRALIZED ACCESS
Work force (cont.)	Airport workers	For limited use	PII	TSA
	Bridge workers	For limited use	PII	
	Dam workers	For limited use	PII	
	Defense decision-makers	For purchase	PII	List brokers
	Benefits records	For limited use	Transactional	
	W-4s	For limited use	PII	IRS
	Government officials	For purchase	PII	List brokers
	Power-plant workers	For limited use	PII	
	Public servants	For purchase	PII	List brokers
	Shipping owners, operators, and managers	For purchase	PII	List brokers
	Port workers	For limited use	PII	TSA

Appendix I

Government Requests for Private Sector Data: An Informal Survey

by Mary DeRosa

Introduction

We conducted interviews with personnel from a variety of companies from which the federal government seeks information to fight terrorism. The purpose of this informal survey was to get a sense of what kinds of customer data the government currently seeks for national security reasons, how it seeks that information, and some of the issues the private sector sees with government use of its data.

We spoke primarily with chief security officers (CSOs) and legal personnel from large corporations. The people we interviewed were very helpful, but, for a variety of reasons, most requested that their company not be identified here. Therefore, this document identifies companies only by their industry. Among the companies—all of which are major players in their industries—were the following: (1.) a credit, debit, and other payment-card company; (2.) a bank; (3.) a manufacturer and significant government contractor in the national security area; (4.) an internet service provider (ISP); (5.) a producer of agricultural products; (6.) an insurance and financial-services corporation; (7.) a chemical company; (8.) a pharmaceutical company; (9.) a telecommunications provider; (10.) a transportation and consumer-service company; and (11.) a data aggregation company. We also interviewed a person familiar with the information the Transportation Security Administration (TSA) seeks from commercial airlines.

Six significant observations

1. Requests from the government for company data are narrow and specific, usually by the name of an individual

With the exception of the data aggregation company (discussed below), the company representatives reported that government requests for information are almost always for discrete record checks. The government does not request broader, pattern-based data inquiries. All company representatives reported that the government sometimes asks for checks of employee records for specific names. The personnel from the credit card company, telecommunications provider, bank, insurance company, and ISP all reported that requests for customer data are almost invariably to provide particular names or accounts and request information about account status, account activity, or transactions. The consumer service company is asked to track to whom it provided a specific service and what that service was.

The requests are somewhat different for companies that do not have individuals as customers, but they are still narrow. The agricultural-products company, for example, receives requests for shipment information: where a shipment is going, to whom, and what is in it. The chemical company is asked whether it has sold specific products to named companies or to customers in certain locations.

One departure from this pattern of narrow requests is with the government contractor. That CSO reported a somewhat broader request from a Department of Justice–sponsored review being conducted by the Defense Criminal Investigative Service (DCIS). For this review, the DCIS has asked the contractor to review its visitor records, which include information about vendor employees and others who have visited the facility, to determine whether all visitors are legitimate and authorized to be in an area where classified work is being conducted. The visitor-record information includes social security numbers or passport and nationality information. If the review turns up any unauthorized individuals, the contractor provides that information to the DCIS.

Another significant exception to the practice of narrow government requests for customer information is with the commercial airlines. Currently, the airlines and global distribution services (GDSs)—clearinghouses for travel records—conduct searches of passenger records and determine a risk score for each passenger, based on a calculation that the government has provided. The airlines and GDSs do not share passenger information with the government in this process. If the TSA implements the second Computer Assisted Passenger Prescreening (CAPPS II) program, however, the TSA will obtain passenger name–record data from the airlines and GDSs. The

TSA will provide some of this data to data aggregators, which will authenticate the passenger identities and provide a score to the TSA that indicates the degree of certainty about the identity. The TSA will then screen the passenger against government databases and will assign a risk level to each passenger. At the end of the process, both the TSA and the data aggregation company will discard the passenger information.

2. Companies provide most information to the government pursuant to a subpoena or other legal process

Most of the companies reported that they demand a subpoena or other legal document before they will provide private or customer information to the government, even when the information is requested for counterterrorism reasons. The telecommunications company, for example, always demands a subpoena before turning over customer information, and a court order for a wiretap. Similarly, the ISP demands a subpoena for member-identity and account information, a court order for transactional data (such as information about with whom a customer is communicating or the customer's online activities), and a Title III court order for the content of communications. According to the representative we interviewed, the only time the ISP will provide information voluntarily is if the government informs the provider of exigent circumstances, such as when lives are in danger.

Some of the companies expressed a willingness to provide information voluntarily on terrorism-related inquiries. The chemical company's CSO, for example, said the company has decided to be a "good corporate citizen" and provide information voluntarily for national security reasons as long as the request is "legal, ethical, and moral." In practice, that typically means that the company will answer questions voluntarily, but if documentation is requested, it will ask for a subpoena. The consumer-service company has made a decision that it will voluntarily provide data—including customer-database information—for homeland security investigations. For normal criminal matters, however, the company demands a subpoena. The government contractor generally provides information voluntarily about visitors, employees, or suspicious activities. It is rarely asked for customer information, but requires a National Security Letter (NSL)—an administrative subpoena that the FBI can use in national security matters—before providing it or when asked to conduct a covert search of employee property. Some CSOs conceded that there could be more information provided informally to law enforcement by security personnel in local offices, who often have law enforcement backgrounds and close relationships with law enforcement personnel.

The situation for the financial companies is somewhat different. They are required by law and regulation to provide a significant amount of customer information, such as Suspicious Activity Reports (SARs), automatically to the Treasury Department's Financial Crimes Enforcement Network (FinCEN). In addition to that information, the CSO of the bank reported that the government frequently makes 314(a) requests for information, which seek information about any listed individuals. These search requests are based on section 314(a) of the USA PATRIOT Act, which provides that law enforcement agencies may, through the Treasury Department, obtain information from financial institutions about identified individuals or entities suspected of terrorism. The bank will search its records and provide the government a "yes" or "no" answer voluntarily, but will require a subpoena or NSL before turning over any documents. The insurance and financial-services company will provide broker-dealer information to the government voluntarily in terrorism cases, but requires a subpoena for any credit or debit card information. The credit card company provides information voluntarily about whether a card is good and about the bank that issued it. For private customer information, the company will require a subpoena.

With the exception of the employee of the data aggregator (discussed below) and the person familiar with airline practices, none of the people we interviewed was aware of special arrangements to protect the privacy or accuracy of information they provide to the government.

3. Some companies conduct their own internal programs to detect terrorist activity

A few of the people we interviewed described programs their companies have implemented or are implementing to conduct broader, pattern-based searches designed to uncover terrorist activity. Two of the financial companies described the activity as related to the Know Your Customer rules that the USA PATRIOT Act and subsequent regulations have required them to implement. Know Your Customer rules require financial institutions to adopt customer-identification programs that verify customer identities and can check them against those of

known or suspected terrorists. The credit card company is looking at refining the data mining that it conducts for fraud detection in order to assist with Know Your Customer compliance.

The bank described a sophisticated terrorist-financing detection program that it has created to look for indicia of terrorist activity in its accounts. This program's software receives information generated from the Know Your Customer rules and from SARs and does data mining to look for patterns of terrorist-financing activity. The motivation for the program is the strong desire of the bank to be disassociated from terrorist groups. The bank views the program as an outgrowth of the Know Your Customer rules; it simply goes one step further to do something about the information it collects pursuant to those rules.

The government-contractor representative also described an internal surveillance detection program the company instituted to detect possible terrorist surveillance of its facilities. The company keeps records of suspicious activities in and around its facilities in a database. It does pattern analysis of this database to find any correlations that could suggest terrorist surveillance. For example, if one security official at a plant sees people in a blue Ford van taking video footage, he will enter that information in the database. The detection program will then look for incidents with similarities, such as other blue Ford vans, the same license plates, or the same behavior. If the detection program finds suspicious correlations, the contractor will provide the information to law enforcement.

4. Companies generally do not find terrorism-related requests from the government to be burdensome

We asked the companies whether government requests for their information for counterterrorism purposes pose a burden. They all answered that the requests are not burdensome. Each company representative described a significant upswing in requests for name checks from the government immediately after September 11, when the FBI was investigating the September 11 attacks. Companies that do not have individuals as customers, like the government contractor, the chemical company, the pharmaceutical company, and the agricultural-products company, were asked to search employee databases for the names. Other companies were asked to search customer records as well. The credit card company CSO said that because of the intense interest in credit card information immediately after September 11, it set up a special coordinating group to facilitate provision of information from issuing banks to the FBI. The pharmaceutical company, in addition to having received requests for employee information, had a great deal of interaction with the FBI in late 2001 about the anthrax investigation.

After this post–September 11 escalation, all companies reported that there was a decline in government information requests related to terrorism. For some, these requests have returned almost to the pre–September 11 level. For most, they remain somewhat higher but are not a burden. The ISP, for instance, still sees an increased volume of requests, and more requests for real-time information about communications, than before September 11.

The financial companies we looked at have increased reporting requirements since passage of the USA PATRIOT Act. This is especially true of the insurance and financial services company, whose brokers and dealers were not required to submit SARs to FinCEN before the PATRIOT Act. The company did submit some reports voluntarily, but its overall reporting has increased tenfold.

5. Companies complain of inadequate information-sharing and a lack of coordination of government requests

The company representatives we spoke with almost universally noted a failure on the part of the federal government to provide information to the private sector. They complained about what they called one-way-street exchanges, in which they provide information in response to requests, but hear only the most general information about the reasons for the requests and, more importantly, receive no follow-up information. The financial companies, in particular, expressed frustration with FinCEN and the FBI. The bank and financial-services companies both noted that they would find information about trends, patterns, and red flags in terrorist financing to be extremely helpful to their efforts to look for suspicious activity. They argue that because they know their business better than the federal government does, they could be helpful to the government if they were brought into the process a little more. The bank CSO noted that the FBI's terrorism-financing section began having meetings with the banking industry to improve information-sharing, but these have fallen off.

Threat information, in particular, is criticized as vague and generally of little use. As one CSO put it, "If you're just going to tell me there is a 'threat to your sector in the U.S.,' don't bother. I can't do anything with that." These officials are told that they cannot receive more specific

warnings from the government in part because the information is classified. Therefore, several of the company officials focused on what they consider to be a need for more personnel with security clearances. They all noted that the federal government is unwilling to support an increase in security clearances for private sector personnel. One CSO who has clearance and access to classified information, and who is a former federal government official, noted that much of the classified information he sees is, in his view, "not that sensitive" and should not be classified.

Another common view of those we interviewed is that the federal government needs to coordinate better its approach to the private sector. Several people sense an increase in competition among federal agencies since the Department of Homeland Security (DHS) opened its doors, particularly in the financial area. Several bemoaned a lack of a single point of contact in the federal government, or even just a few. The agricultural-products company is receiving overlapping requests willy nilly from an increasing number of agencies. The chemical company CSO "would like not to be asked the same question by five different agencies." Several CSOs believe the DHS is the appropriate solution to the coordination problem. But they do not see the DHS taking on this role. As the representative from the pharmaceutical company commented, the DHS has been "slow coming out of the gate" and has not even taken the first step of developing a list of contacts in key industries.

6. The federal government is using data aggregation companies to perform broader, national security–related searches

Although the federal government is not making broad requests for searches of the databases of the corporations discussed above, it is doing that kind of search using the services of data aggregation companies. Data aggregation companies collect information that is, for the most part, publicly available. What they do is bring together information from thousands of sources and make it searchable. The types of information collected by the company we looked at, according to the company's representative, are listed below.

TYPES OF INFORMATION CONTAINED IN DATA AGGREGATION DATABASES

1. Public records, such as courthouse records, real estate records, tax liens, judgments, business-related information from secretaries of state, professional licenses, and some Department of Motor Vehicles (DMV) records

   Some states do not allow sale of, or access to, DMV records, but approximately 28 states do allow at least limited access. For example, the states will allow access to the records for law enforcement purposes. The data aggregator can then search these records only for clients that have legitimate access.

2. Other publicly available information, such as White Pages information on the Internet

3. Nonpublicly available information, such as "credit header" data

   Data aggregators do not have access to entire credit reports, but they can collect the header information, which usually includes name, social security number, address, and phone number. Access to this information is restricted under the Gramm-Leach-Bliley Act, but that law allows some market access for specific purposes, such as fraud detection and law enforcement. Again, the data aggregation company must determine the purpose for the search before it can be conducted.

Prior to September 11, most government queries to data aggregation companies were discrete: The government would request searches on specific names or address. Since September 11, there has been a significant increase in interest from many national security agencies in providing large quantities of information to data aggregation companies and quickly having that information analyzed for links to other relevant information. One national security agency, for example, is providing a stream of data on possible terrorists to the data aggregation company we looked at. The company uses Extensible Markup Language (XML) technology to identify those individuals and provide links to other people and organizations. The information returned is the raw data with the links that the agency can integrate into its existing system for further analysis. Another agency has requested that the company conduct link analysis on subjects and notify the agency of noteworthy links. One other example involves an agency that provides a long list of names to the aggregation company and asks the company to check regularly on the status of those people and alert the agency of changes of address, etc.

The data aggregation representative we interviewed identified the filtering of false positives as one of the biggest challenges in conducting these searches for the government.

There are some errors in the public data or credit-bureau data, such as incorrect addresses or transposed digits in social security numbers. The aggregation company has a number of software-based methods for identifying these errors. When an aggregator identifies a possible false positive, for example, he or she flags it for the government and can discard it from the output the company provides. The aggregator does not, however, correct the original data.

Appendix J

Data Analytics Practices of the Private Sector

by James X. Dempsey and Lara Flint

Introduction

In considering how the government could make better use of information technology for counterterrorism purposes, our Task Force thought it would be useful to consider how the private sector uses data for identity verification, risk assessment, and related purposes. To this end, the Center for Democracy and Technology (CDT) held discussions with representatives of companies and government agencies involved in data analytics. Specifically, CDT consulted with representatives from four leading companies—Acxiom, IDAnalytics, JP Morgan Chase, and SRD—to find out how their companies make use of data analytics. Those representatives explained their companies' technologies as follows: (1.) Acxiom uses a data-matching and identity-verification methodology; (2.) IDAnalytics is developing a fraud-identification system in order to identify fraudulent credit applications before they are accepted; (3.) JP Morgan Chase uses data analytics to identify fraudulent transactions within its customer base; and (4.) SRD uses data analytics to identify relationships among individuals.

Based on the presentations by the four companies' representatives and the ensuing dialogue, we came up with some preliminary conclusions and questions that might help inform the debate surrounding government use of data-analytics techniques on large databases—public and private—for law enforcement and intelligence purposes.

Conclusions about the use of data analytics in the private sector

1. **Data matching or retrieval on a name-only basis is very difficult—even worthless in many contexts.**
   Data matching or retrieval on a name-only basis is difficult because commercial data analysis is usually done on the basis of two identifiers (name and address, at a minimum), or on the basis of other identifiers.

2. **Effective commercial data-analytic techniques rely on the establishment—and maintenance—of a set of good, or true, identifiers.**
   There are effective techniques used in the private sector for recognizing that two sets of information pertain to the same individual. Their success depends on the accuracy of the information in the databases against which a particular set of personal identifiers is matched (for example, a name and address). Private companies determined several years ago that the most effective way to match data was to build verified reference tables. These tables consist of personally identifying data that the company is (nearly) certain is accurate. New information can be compared with the repository of verified information to determine whether they match. Thus, for example, if a new name and address combination is presented for review, it is possible to evaluate how close the representation of the name is to names already known to be associated with that address. This methodology results in a more accurate match than does matching two sets of data without initially evaluating the accuracy of at least one of the data sets. In short, it is not effective to run one set of data against another to look for matches without first evaluating the accuracy and completeness of at least one of the sets of data.

3. **Identity theft has complicated the process of data analytics.**
   Individuals are no longer the only holders of complete and accurate data on themselves. The ever-growing problem of identity fraud makes the usefulness of a repository of verified "known" information uncertain because fraudsters are now able to access the full panoply of identifiers about other people. As a result, in the attempt to identify fraudulent applications for credit or insurance, it is increasingly less reliable to compare the information provided by an applicant with known "true" information because the fraudulent applicant will have the same accurate information about the individual whose identity he or she is assuming as the private company seeking to verify that identity.

4. **Methodologies are being developed to detect fraudulent credit applications that contain accurate information and those for which there is no match to a known fraudulent record.**
These methodologies are based on millions of case examples from financial institutions, cell phone companies, etc., at which it has been possible to track the record of applications to find which ones are fraudulent. The ability to track these records has allowed analysts to determine the predictive patterns that the data analytic technology must find. The development of sophisticated methodologies such as these depends on a company's ability to accumulate information from fairly controlled environments and from many transactions. The technology is consortium-based (it requires that a variety of industries provide information), so that patterns can be identified. In the context of credit card fraud, this approach to predicting bad behavior requires a very large sample of other similar bad behaviors against which an individual's current behavior can be compared.

5. **One of the best technologies for identifying known fraudsters is based on voluntarily provided information.**
An effective system for protecting businesses from individuals with known undesirable backgrounds relies in large part on information that is voluntarily provided to the employees who conduct screening processes. For example, a representative of a technology company told us about a method of detecting fraud at a casino. The casino collects data from vendors, employees, hotel guests, and others who voluntarily provide that data in the course of filling out a job application or hotel registration. The casino's data-analytics technology then helps to root out employees, vendors, and guests who have connections to known fraudsters—in this case, people on the gaming commission's blacklist of persons with a record of fraud—by finding relationships among the data.

6. **In attempting to identify individuals who pose risks, it is more effective to identify those who have relationships with known fraudsters than to try to predict patterns of suspicious behavior.**
The tracking system described above uses information about vendors, employees, hotel guests, and others, to determine who might pose a risk or have a relationship with gaming felons. Such a system could also help to determine individuals who might have relationships with known terrorists. Moreover, this relationship-awareness approach can be more effective in identifying risks than that of attempting to predict suspicious patterns of behavior. For example, one company's research in pattern-recognition technology showed that attempting to identify risks through pattern analysis resulted in such an overload of statistically interesting leads that would need to be investigated, that it became impossible to prioritize them, much less investigate them. Essentially, the overload of information that results from looking for patterns renders the analysis useless. This suggests that attempting to locate patterns of behavior indicating the planning of a terrorist attack would result in huge numbers of false positives and false negatives and would not be useful.

7. **As a practical matter, watch list fidelity (its accuracy and completeness) is one of the biggest challenges faced when attempting to identify risks.**
If a watch list contains inaccurate or incomplete data, it will be very difficult to compare data against that list. In particular, as stated earlier, name-only matches are meaningless because more information than simply a name is necessary to determine whether an individual is, in fact, the person listed. In terms of the government's use of data, this suggests that watch lists need to be verified to ensure they are accurate, complete, and up-to-date. This is particularly important if watch lists are to become the centerpiece of a system that seeks to identify those who have relationships with known terrorists.

8. **Anonymization of watch list data may be possible for purposes of comparing a list to private sector information.**
Technology is being developed that would allow the government to provide an essentially unreadable version of a watch list to commercial entities, who could check the watch list against their information without actually learning what information is on the watch list. If a match is found, the government would be notified that the commercial entity has some relevant information. The government, in turn, could obtain that information directly from the commercial entity (using appropriate legal processes). During the anonymized matching process, the commercial entity would not know whether there had been a hit and ultimately would not necessarily need to know whether the government was seeking further information on an individual as a result of the particular search.

Questions raised by our conclusions

The data-analytics practices of the private sector seem to depend heavily on matching name and address (plus other identifiers in some contexts). Some questions revolving around this issue and the conclusions above are as follows:

1. What is the quality of the name and address information available to the government?
2. Is this information available on short notice to government agencies?
3. Is it possible to determine the most useful data for detecting fraud?
4. How are broader categories of data used (for example, purchasing records or travel information)? And would these broader sets of data prove useful for fraud detection? And for risk analysis?

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