In this chapter we discuss a number of different activities undertaken by the federal government aimed at helping to meet the technology needs of local and state law enforcement. These activities seek to address the technology adoption roadblocks discussed throughout this report to facilitate the deployment and effective use of new technologies by law enforcement organizations. Though there is some overlap in the particular roadblocks which the programs described in this chapter and those in the following chapter address, those included here are aimed at the barriers of cost, technology risk, and, indirectly, at the unanticipated risks of acquiring new technologies.

Government strategies seeking to neutralize the barriers of cost associated with new technologies include the direct supply of materiel to local law enforcement by federal sources (such as the FBI-supplied DrugFire system for firearms analysis) or direct funding of purchases by providing money designated for technology to the organizations. These programs, by providing technology itself or earmarked funds, circumvent issues of opportunity cost or trade-offs between technology purchases and investments in other resources.\(^1\) Similar effects can be obtained by providing local law enforcement organizations access to federally owned technologies—such as FBI fingerprint data.

Providing access to federal technology and directly supplying technologies themselves may also reduce other adoption risks as well. By

\(^1\)It should be noted, however, that circumventing these trade-offs may not be ideal from an overall welfare perspective. If a local police force could better use resources in other ways, requiring that they are invested in technology may not result in the greatest increase in public safety for a given cost.
providing already “validated” and broadly accepted technologies, these routes can limit the technology risk to the local department and the risk of adverse public reaction as well.

Federal programs also seek to provide local law enforcement with technology evaluation and standards resulting from the performance of impartial and comprehensive tests on relevant technologies. Such testing, by generating a body of trusted information, can reduce the technical risk associated with procuring a new technology. In addition, the validation of the technology inherent in “passing” federal tests can also make its use more acceptable to public constituencies. Federal research and development programs, because of both their information gathering and their legitimating effect on the technologies they examine, could also reduce technical and unanticipated risk. Unlike technology evaluation, R&D also has the potential to affect the absolute and relative costs of technologies as well. By improving existing technologies, R&D or commercialization activities may result in decreasing costs or increasing capabilities. This shift can result in a technology becoming more attractive for deployment over the long term. In addition, R&D activities are the only approaches to these technology adoption problems that have the potential to produce entirely new technologies—and perhaps unprecedented capabilities—that could change the entire stage on which law enforcement organizations make technical decisions both in the short and long terms.

It should be noted, in the more detailed findings presented in this chapter, we focus on local departments and forensic laboratories, while not providing data on state police. This is because we believe there were too few responses from state police to the RAND survey for us to assess how well federal programs serve their needs.

Major findings in this chapter include:

- While very few local police departments consider themselves participants in federal R&D or commercialization programs, of those that are their judgment of them is generally positive. The lack of awareness of the nature and benefits of these programs represents an important area of potential improvement to increase the impact and effectiveness of federal efforts.
Unsurprisingly, members of local law enforcement strongly support programs that send federal resources or technology to local organizations. It is possible, however, that these sorts of short-term approaches to technology problems that address only a limited number of the potential barriers to technology adoption are not the most effective use of limited federal resources.

Given the importance ascribed to federal standard setting and technology evaluation activities by focus group members and interviewees, the low level of reported utilization of these resources by local law enforcement is surprising. This may represent an important area to address in making these resources more accessible and targeted to satisfy the needs of these organizations.

R&D AND COMMERCIALIZATION

The National Institute of Justice and other federal agencies support efforts to improve technology through research, development, and commercialization. At the time of writing, NIJ’s research and development programs and projects, managed under its Office of Science and Technology, include the following:


**Less-Than-Lethal Technologies**: Capture Net, Laser Dazzler™, Pepper Spray Projectile/Disperser, Ring Airfoil Projectile, Sticky
Shocker, and Test Article Support to Vehicle Stopping Technology Program.


**Technology Tools for Training and Simulation**: Bomb Threat Training Simulator and Weapons Team Engagement Trainer.2

In addition to R&D to devise new technologies that are not currently available, there is also significant federal activity in technology

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commercialization. Commercialization involves adapting technology already developed for other applications (such as military use) to address the needs of law enforcement. Such activities are necessary for technologies that, while applicable to the law enforcement market, may not have sufficiently large demand to justify private firms investing in the costs of commercialization. The NIJ Office of Law Enforcement and Technology Commercialization (OLECTC), part of the NLECTC system, was created to assist with commercialization, including technology transfer and adaptation of appropriate technology produced in both large and small, private and government organizations.

As is the case for most R&D activities and “behind-the-scenes” product development, the final customers who purchase the resulting products are often unaware of what went into them. Consequently, it is not surprising that only about 20 percent of the departments responding to the RAND Law Enforcement Technology Survey were aware of having received any federal support in the area of R&D or commercialization (Figure 3). Since most local departments do not perform R&D or generally request technology commercialization aid, there is little reason for them to be aware of these programs. As discussed in the earlier sections, the focus of many burdened departments and laboratories is necessarily short term on the immediate priorities of today; as a result, the long-term focus of R&D must seem distant from their current needs.

Restricting attention for the moment to the departments that were aware of receiving aid in this area (see Figure 3), more than 50 percent of that subset (9 percent of all departments versus 8 percent) found the aid at least somewhat helpful (LETS, 13j). As a result, while definitely indicating substantial opportunities for improvement in this area, the programs are perceived as net beneficial even among a population with little reason to be cognizant of them. Examining the data for forensic labs, an audience more likely to be cognizant of R&D, an even clearer majority found federal R&D assistance at least somewhat helpful (FTS, 18j).

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3For the LETS survey to local police, percentages have been statistically adjusted to represent the entire population. See Appendix A for a description of the adjustment methodology. For the LETS survey to state police and the FTS survey to crime labs, results are reported as unadjusted percentages.
Figure 3—Utilization and Helpfulness of Federal R&D or Technology Commercialization

Although local departments may not rate the importance of federal R&D, standards development, or commercialization as highly as direct funding, this should not be interpreted as “evidence against” the support of these activities. There is a real need for federal sponsorship in these areas because the law enforcement market is neither big enough nor lucrative enough to attract sufficient private sector R&D investment.

TECHNOLOGY DEPLOYMENT

Given the legitimate interest in attracting funding to support their departments and agencies, it is not surprising that state and local law enforcement agencies like federal support in the form of funding for technology acquisition. As alluded to in the opening of this chapter, such federal aid need not be traded-off against other potential uses
of resources. Furthermore, if it has been earmarked for specific technologies or devices, then the funds need not even be traded-off among different technology options. Such an approach can represent a legitimate short-run approach to law enforcement technology shortfalls. The more fundamental question that must be answered is whether funding for technology acquisition is the most effective and efficient way to allocate limited federal resources, especially over the long term. While a direct funding or supply strategy does decrease shortages quickly, once the funds are spent the investment can only depreciate as the purchased technologies age. Alternatives such as R&D (discussed above), providing access rather than ownership, provision of information (including testing, evaluation, and standards), and leadership in coordinating multi-jurisdictional use of technology could be better in the long term.

**Direct Funding**

Given the institutional requirements required to participate in federal programs or request grant money, it is not surprising that larger local departments received more funding for technology acquisition. While only 36 percent of rural departments reported receiving such support during the past year, 40 percent of urban departments serving populations less than 25,000, 71 percent of departments serving 25,000–75,000, 75 percent of those serving 75,000–225,000, and 79 percent of departments serving populations larger than 225,000 received funding for technology acquisition (LETS, 13a; FTS, 18a).

The success rates for departments—the percentage of organizations that reported receiving requested federal funding in this area—are also quite dependent on department size. While only 3 percent of the largest urban departments reported not receiving federal aid which they requested, this number increases up to a maximum of 41 percent for rural departments.

Among local departments, a large majority of those receiving federal funding for technology characterized it as at least somewhat helpful (Figure 4). Of the total survey sample, 29 percent of local police departments characterized such support as very helpful or essential. Among responding forensic laboratories, 46 percent rated such support similarly.
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Figure 4 — Utilization and Helpfulness of Federal Funding for Technology Acquisition

It should be noted that, although the disproportionate representation of larger departments in this area could be related to their size, because many of these departments police areas of much higher crime than small rural departments, there may be sound reasons for the concentration of resources.

Direct Supply

In addition to providing funding, some federal programs provide technology directly to police departments or crime labs. For both laboratories and departments a large majority of those aware of receiving federal technology rated it as at least somewhat helpful (LETS, 13b; FTS, 18b). Among local departments 29 percent charac-
terized federally supplied technology received during the past year as very helpful or essential. Among forensic laboratories 43 percent rated such support similarly (Figure 5).

Access

Rather than providing technology to local departments, another strategy involves providing access to federal technology. By centralizing a common resource, this strategy can reduce costs and make it easier to keep the relevant technology “up-to-date.” Among local departments, 13 percent (Figure 6) characterized access to federal technology received during the past year as very helpful or essential. Among forensic laboratories 43 percent rated such support similarly (LETS, 13c; FTS, 18c).

SOURCE: LETS, 13b; FTS, 18b. Numbers are percent of agencies responding as indicated to the question, “During the past year, to what extent has federal support in [this area] been helpful to your agency in carrying out its mission?” FTS numbers shown are percent of respondents; LETS values are statistically adjusted percentages.

Figure 5—Utilization and Helpfulness of Direct Supply of Federal Technology
Testing, Evaluation, and Standards

Because of the range of technology options that are available to organizations, it is often difficult or impossible to gather and analyze enough information on each product and make an informed decision. This can be especially problematic for organizations, like law enforcement, that are under short-term time and performance constraints. As a result, impartial and rigorous technology evaluation can be a great help to these organizations by gathering, analyzing, and presenting data on various technology choices to make it possible to rapidly choose among them.
Although the federal government is not in a position to rate competing products or technologies the way the Consumer’s Union does in its publication *Consumer Reports*, it can establish performance standards and, in some cases, identify which products meet those standards (see Table 27). A noteworthy example is the work by the National Institute of Justice (NIJ) and the National Institute of Standards and Technology (NIST) Office of Law Enforcement Standards (OLES) in establishing standards for personal body armor and conducting a voluntary body armor compliance testing program.4

Akin to standards are “best practices.” Examples of this include *Best Practices for Seizing Electronic Evidence*, jointly prepared by the International Association of Chiefs of Police and the U.S. Secret Service, and *Crime Scene Investigation: A Guide for Law Enforcement*, published by the National Institute of Justice. In some instances where it is not clear what are best practices, it is possible to say what are bad practices, that is, what *not* to do.

The RAND survey found that 45 percent of all local police departments with more than 100 officers, but only 26 percent of departments with fewer officers, reported having received federally supplied information on technology evaluation or standards during the past year.

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4For more information, see http://www.nlectc.org/National/bodyarmor.html.
As was the case for R&D previously, when the views of the subset of respondents who were aware of receiving federal aid in this area were examined, the overall impression is generally positive. Seventy-one percent of local police departments responding to the RAND Law Enforcement survey reported either not requesting or not receiving any federal assistance in the form of technology evaluation or standards during the year. Forty-two percent of respondents to the RAND Forensics Technology survey reported not requesting or not receiving federal assistance of this type (Figure 7). This apparent lack of utilization of federal standards setting and technology evaluation services is in marked contrast to the support of these activities expressed by participants in RAND focus groups. As one focus group participant put it, “without federal support for technology standards and commercialization, the law enforcement community is destined to continue to be disappointed by vendors who try to sell them secondhand technology originally designed for other purposes.”

Of the 27 percent of the local police departments that reported they received federal assistance in the form of technology evaluation or standards, two-thirds evaluated the assistance as being at least somewhat helpful. Few regarded this assistance as essential. Among the 58 percent of crime labs that reported they received this type of assistance, almost seven-eights found the assistance at least somewhat helpful. About one in five of those respondents viewed the assistance as either very helpful or essential (LETS, 13f; FTS, 18f).

**Coordination**

There are many ongoing efforts involving federal agencies and others to coordinate, harmonize, or standardize data, procedures, or technologies. XML (the Extensible Markup Language) was briefly mentioned earlier; it is but one of a number of transnational, national, and regional efforts that is likely to yield substantial improvements in ability of agencies and other groups to share information and solve interoperability problems.

The Justice Department’s Information Technology Initiative is coordinating all activities associated with integration of justice information systems at the state and local levels. Such coordination efforts
are immensely complex. For example, besides having to specify compatible formats and using compatible technology, data sharing has to take privacy concerns into account. The U.S. Department of Justice, Office of Justice Programs, working with the Office of the Ontario Information and Privacy Commissioner, has drafted a set of privacy design principles for an integrated justice system.\(^5\) These include: purpose specification, collection limitation, data quality, use limitation, security safeguards, openness, individual participation, and accountability. Each of these principles is, in itself, fairly complex.

We noted above that the RAND survey found a low rate of linkage of files among agencies and other jurisdictions. As obstacles to sharing information are removed or reduced, state and local agencies will not automatically know how to exploit the new possibilities.\textsuperscript{6}

\textsuperscript{6}For a more comprehensive description of the current infrastructure for justice information sharing, see the Global Justice Information Network, \textit{Annual Report 2000}, which is accessible at http://www.iir.com/global/report.htm.