CORMAP It

A seemingly random fight between two inmates in a prison yard quickly escalates into a brawl. After corrections officers quell the disturbance and return the inmates to their cells, an incident report is filled out. On the back of the incident report form is a schematic of the facility overlaid by a grid and coordinate markers. The reporting officer details the disturbance and indicates on the schematic exactly where the incident occurred.

The incident report is then mapped by a staff analyst, who records the time and location of the incident and the names and cell locations of the inmates involved. Comparing this map with maps and data from previous incidents, the analyst sees that the brawl site also was the scene of a number of disturbances that occurred only in the late afternoon when this area was deep in shade. The analyst then links these maps with such additional inmate data as age, race, religion, and possible gang affiliation. It now appears that the fight may not have been random but instead was the result of an ongoing dispute between rival groups.

Taking the investigation a step further, the analyst overlays a map of inmates who have tested positive for drugs in the past year, then a map of the flow of money in and out of the inmates' accounts. The picture that now emerges is one of a turf war for control of the drug trade within the prison.

This scenario comes from the prison of the future— a prison that will take full advantage of the warehouse of information it maintains and then use the principles of geographical information systems (GIS) to link mapping and spatial analysis to the data. But this prison is not that far in the future. Its prototype is in development through a joint project between the National Institute of Justice's National Law Enforcement and Corrections Technology Center (NLECTC)–Southeast and the U.S. Department of Energy's Savannah River Technology Center (SRTC).

Although crime mapping already is used extensively by law enforcement, a major hurdle to using mapping in prisons is the cell-above-cell construction of the living areas. GIS, which operates in two dimensions, cannot be used in prisons because of the multiple levels in many of the buildings. SRTC engineers working with corrections

personnel on staff at NLECTC–Southeast and its regional advisory council have solved this problem by integrating CAD (computer-aided design) technologies, which offer a third dimension. The combination of GIS and CAD technologies allows each cell to be displayed on a computer screen as a separate, identifiable living unit. Individual inmates can thus be shown by referencing them to their assigned beds. This corrections mapping, or CORMAP, instantaneously displays the bed location and available information (data linking) for an inmate when the operator clicks on a bed on the map or enters the inmate's name or number.

Although corrections mapping is not yet at the stage described in the scenario above, it is capable of tracking and displaying visitation patterns, medical information, religious affiliations, cell location, and other inmate data. "You can color-code cells and see interesting relationships," says Larry Koffman, Ph.D., principal engineer at SRTC. "If you're getting ready to assign a new inmate, you can quickly display an inmate location map to spot any potential conflicts within the housing unit you're considering. That's what GIS lets you do—link graphics with tabular information."

Koffman says corrections mapping can be useful in situations in which contagious diseases are a problem. An analyst can list an inmate's previous cellmates (primary contacts), with whom those previous cellmates lived (secondary contacts), and with whom those people lived (tertiary contacts), as far back as records allow. Given a known source, mapping can trace the course of the disease through the prison system and provide information to prevent further contamination.

Mapping programs also can help prison officials deal with the tremendous amount of inmate movement. "We release several thousand inmates each year, either as a result of parole or discharge," says John Taylor, a former assistant warden now in charge of the Virginia Department of Corrections' Offender Management Automation System project. "When an inmate leaves, he usually is discharged from a lower security facility. So every time an inmate drops a security level, he moves. This means

somebody else has already moved out of that spot. This also means someone else has moved into that inmate's previous cell. In addition, there might be an inmate conflict in a cell and you have to move somebody. Or an inmate gets sick and has to be moved to a medical facility. We have a lot of inflow and outflow; we need to be able to track inmates' movement through the system."

Mapping and analysis programs prove the adage that a picture is worth a thousand words. Proponents foresee a time when corrections mapping can be used to—

- Track and display inmate location and movement via electronic monitoring devices.

- Indicate whether a housing unit is balanced with regard to religion, group affiliation, age, race, and ethnicity.

- Pinpoint the locations of gang members and link them to each inmate's behavioral and criminal history, as well as the inmate's rank in the hierarchy of the group. (This would allow for segregation or lockdowns as necessary, which is especially important because committing violent acts is how an inmate moves up in the rank structure of certain groups.)

- Pinpoint areas in a facility that are potentially dangerous, such as hallways or blind corners where a number of assaults have occurred. (Identifying those areas might lead administrators to put additional officers in the area, increase the lighting, or reroute foot traffic.)

- Incorporate aerial photos of the facility to check for possible security breaches and potential escape routes.

- Provide a basis for proactive investigation and enforcement. (For example, mapping the flow of money in and out of a facility and then linking this information with data about visitation, telephone calls, and corresponding addresses could show a potential drug problem.)

- Link inmate data with the names, telephone numbers, and addresses of all the people the inmate had contact with during incarceration, in case of an escape.

There are, however, several roadblocks that need to be overcome before a correctional facility can fully use a mapping and analysis system. Unlike law enforcement, which uses longitude and latitude to pinpoint an event, a correctional institution has no such coordinates. Although some newer facilities offer electronic blueprints that can be assigned coordinates, older ones do not have these blueprints. In addition, although cell blocks and buildings may have names, their interiors do not have addresses like those assigned to homes and buildings. Corrections administrators and program developers will have to find a way to put markers or "addresses" on the walls or floors of a facility. Corrections mapping also will require reports to include specific information about incident location. Information now recorded is often too vague to be usable.

The advantages of implementing a mapping and analysis system, however, will be significant. "It would give us immediate access to information that otherwise would sit in a warehouse and gather dust," says Taylor.

"We won't have to be constantly updating wall maps," says Ken McKellar, division director of security for the South Carolina Department of Corrections. "We won't have to sort through and translate raw data. We'll be able to push a button and get the information we want."

According to Rob Donlin, who heads up the CORMAP project for NLECTC–Southeast, the idea of a mapping and analysis program for corrections has been met with great enthusiasm. NLECTC–Southeast staff have presented information about CORMAP at conferences and workshops. Donlin says they have been inundated with calls from correctional institutions around the country, all offering their facility as a testbed. "We're now working on the program's information links, and then we'll select the test institutions," Donlin says. "Once the CORMAP design is complete, we'd like to get it out into the field as quickly as possible."

For more information about corrections mapping, contact Rob Donlin at NLECTC–Southeast, 800–292–4385, or e-mail donlin@nlectc-se.org.