

**TESTIMONY OF**

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**Before**

**Committee on Homeland Security's Subcommittee on Border and Maritime Security on  
Stopping the Flow of Illicit Drugs in Arizona by Leveraging Local, State, and Federal  
Information Sharing**

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## **SUMMARY**

**Testimony of Dr. Jay F. Nunamaker,**

**University of Arizona**

**May 21, 2012**

### **Stopping the Flow of Illicit Drugs in Arizona by Leveraging State, Local and Federal Information Sharing**

The purpose of this testimony is to propose a solution to facilitate information sharing and collaboration across federal, state and local agencies in order to reduce the illicit flow of drugs. Based on over 40 years of research in these areas, I discuss three key components to successful information sharing and collaboration:

- Trusted Social Networks
- Shared tacit and explicit knowledge
- An integrated data infrastructure

Each of these components is carefully laid out in my testimony.

Information sharing by state, local and federal agencies to stop the flow of illicit drugs is an important goal, but a difficult task to accomplish. In order to be effective, it requires cultural, behavioral and technical infrastructure changes, as well as cooperation and the alignment of agency goals and objectives. This will not be easy to accomplish. It is difficult to share information and collaborate in real time, while simultaneously being effective and making a difference. No one does it well, except for sport teams, and not even all of them do it effectively. There are many reasons why information sharing is difficult, including lack of trust, power and infrastructure. Even if all these reasons are resolved, the issue of change still remains. No one likes to change.

I have spent over 40 years studying information sharing and developing collaboration technology. The systems we created are used by leading companies such as IBM, American Express, Proctor and Gamble; as well as by all branches of DOD, the White House and many foreign governments. We had a long term project with DARPA and the US Navy to develop collaboration technology and information sharing for the “command ship of the future,” the U.S.S. Coronado. These technologies are still in operation on the carrier fleet today.

I hope that this testimony provides some insights into better ways to facilitate the collaboration and information sharing across agencies that will greatly inhibit the illicit flow of drugs into our country.

**Distinguished Members of the Subcommittee, it is an honor to appear before you today to discuss “Stopping the Flow of Illicit Drugs in Arizona by Leveraging State, Local and Federal Information Sharing.”**

Information sharing by state, local and federal agencies to stop the flow of illicit drugs is an important goal, but a difficult task to accomplish. In order to be effective, it requires cultural, behavioral and technical infrastructure changes, as well as cooperation and the alignment of agency goals and objectives. This will not be easy to accomplish. It is very hard to share information and collaborate in real time, while being effective and making a difference. No one does it well, except for sport teams, and not all of them do it well. There are many reasons why information sharing is difficult, including lack of trust, power and infrastructure. Even if all these reasons are resolved, the issue of change still remains. No one likes to change.

I have spent over 40 years studying information sharing and developing collaboration technology. The systems we created are used by leading companies such as IBM, American Express, Proctor and Gamble; as well as by all branches of DOD, the White House and many foreign governments. We had a long term project with DARPA and the US Navy to develop collaboration technology and information sharing for the “command ship of the future,” the U.S.S. Coronado. These technologies are still in operation on the carrier fleet today.

We have a strong relationship with Customs and Border Protection (CBP) that started in 2005. As part of an Air Force project, we tested technology at the Nogales Port of Entry for effective secondary screening. In 2008, we were awarded a six-year Department of Homeland Security (DHS) Center of Excellence for Border Security and Immigration (BORDERS), with CBP as one of our primary stakeholders. In 2010, The University of Arizona, along with the University of Texas at El Paso, was awarded a two-year project to evaluate the effectiveness of border checkpoints. At the present time, we are conducting interviews of apprehended illegal border crossers in the Tucson Sector on behalf of the (DHS) Office of Immigration Statistics. In cooperation with the CBP Tucson Office of Field Operations (OFO), we have completed phase 1

of a pilot project for screening applicants for the SENTRI Trusted Travelers Program at the Nogales Enrollment Center . In addition, we have been involved with Dr. Hsinchun Chen on the development of COPLINK, an information sharing system for local law enforcement agencies. This has provided us with extensive knowledge of federal, state and federal law enforcement agencies regarding information sharing. The purpose of this testimony is to propose a solution to facilitate the collaboration and information sharing across agencies in order to reduce the illicit flow of drugs.

There are three key components to successful information sharing and collaboration: trusted social networks, shared tacit and explicit knowledge, and an integrated data infrastructure.

#### Trusted Social Networks

Although research on cross- organizational problem-solving and information sharing is scarce, there is evidence that it can be done. This generally takes place in social networks where individuals rely on each other to accomplish mutual goals. Trust plays an important role in these networks. Current research points out that trust comes from different sources and takes different forms during the relationship. Early on, trust is frequently built on a calculative basis as people consider the perceived risks and benefits associated with a particular interaction. As the relationship evolves, the calculative component is gradually replaced by a knowledge-based component, which involves positive and negative experiences in individual interactions. At any point, trust can be based on an institutional component through contracts, formal agreements or legal frameworks. Many times, this institutional component plays an important role in the early stages of a relationship because it reduces the perception of risk or improves the legitimacy of the network. Another important component in successful networks is the design and adaptation of a governance structure that facilitates and manages interactions among network members.

### Shared Tacit and Explicit Knowledge

In order to be effective and innovative in finding solutions to problems, social networks need to share knowledge. While using subject matter experts to solve a problem may lead to more robust solutions, it is important to remember that expert knowledge is socially constructed in specific contexts and linked to local practices. Knowledge has two dimensions, an explicit dimension that is contained in documents, databases and other objects created by experts; and a tacit dimension that is embedded in practice. This tacit dimension of knowledge is hard to share and it can be a barrier to developing better understanding of a particular problem. Moreover, research has also identified different levels of knowledge sharing, a syntactic level (concerned with common sets of symbols), a semantic level (related to shared meanings) and a pragmatic level (associated with practice).

### Integrated Data Infrastructure

A final component to information sharing is an integrated data infrastructure, which is frequently associated with the concept of interoperability. Interoperability can be defined as “the mix of policy, management, and technology capabilities (e.g., governance, decision making, resource management, standards setting, collaboration, and Information and Communication Technologies such as software, systems, and networks) needed in order for a network of organizations to operate effectively.” Interoperability delivers value by creating new knowledge by integrating information from multiple sources across organizational boundaries. In order to build interoperable systems, many different “agencies” must be crossed. Creating cross-agency interoperability requires support from the highest levels of government, particularly when creating interoperable systems across government levels or national boundaries.

### Cross Agency Issues

The framework provided above provides a set of ideas to organize conversations related to information sharing challenges to reducing illicit drug flow. As mentioned above, trust is a

critical ingredient in any relationship. As different levels of law enforcement explore ways to cooperatively reduce the flow of illicit drugs, the issue of trust becomes paramount and can affect all levels of cooperation. For example, as agreements are reached, there must be a genuine faith that all agencies will live up to their obligations. Furthermore, on the front line, personnel from all agencies must feel comfortable that their counterparts will act in good faith. Issues such as corruption or commitment can seriously undermine security efforts and willingness to collaborate. New methods for inspiring trust must be established to ensure interagency cooperation to reduce illicit drug flow.

Perhaps no other area of cooperation is as dependent on trust as information sharing. The primary question is: what information should be shared and how can its accuracy be verified? Information such as personal identification, criminal history, and sensor data could provide valuable insight and lead time for agency personnel. There is evidence to suggest that some agencies find it inconvenient or not in their best interest to share information with offices under the same umbrella, let alone those outside of their organization. Issues such as classification of data, concerns about collection methods, and who has the authority to release information must be addressed to allow meaningful information sharing.

Beyond trust, there is a technological component to information sharing. Even if the decision is made to share information, a deficiency across agencies in infrastructure capabilities could hinder the ability to accomplish this goal. For example, transferring information from one database to another is not a simple procedure, especially when disparate technologies exist. Additionally, when considering real-time video and sensor data, the data files can become extremely large. Even voice communication through radios and cell phones can pose significant challenges, especially when security is an issue. Therefore, in order to maximize information sharing, it would be prudent to examine the IT architectures of all agencies and address any significant imbalances.

Another important component to effective information sharing is related to the need of a governance structure to coordinate the efforts of the federal, state and local agencies involved. Although there may be strong incentives to resist cross-agency collaboration, interagency governance and collaboration through networks appears to be effective in solving these problems.

Assuming trust, information sharing, technological obstacles and governance can be overcome, differences in institutional culture may still undermine these efforts. These may include agency attitudes toward technology, personal privacy, and what they perceive as legal obstacles to cooperation. These cultural differences need to be thoroughly understood and mitigated in order to effectively collaborate and share information.

#### Specific Challenges

Based on the field studies conducted at The University of Arizona, we found that there are common areas of concern for federal, state and local law enforcement personnel. I will summarize the top four issues with the hope that it will spur discussion on how to resolve them from a multiagency perspective. First, all personnel called for better interagency coordination, especially in regard to information sharing. While roles and responsibilities in the field are fairly well-defined, agents believe that better coordination at the political and high-level leadership levels would improve both information-sharing and resource allocation/sharing.

The second issue involved managing disparate databases. Every organization develops and maintains its own set of databases for tracking information relevant to the agency, and may be protective of who can gain access. However, the information maintained in one database could be of use to another agency if shared. Furthermore, when one database is updated, related information in a related database may not be automatically updated. This creates a significant amount of extra work to determine which information is accurate. Also, when a database is

shared but not integrated, agents often need to use multiple login/password combinations thus hindering efficient information sharing.

The third concern is field communications. For example, when Border Patrol switched from analog radios to digital versions for improved secure communications an unforeseen byproduct was occasional communication outages. Another complication is that it is often difficult for federal personnel to talk directly to local law enforcement. As a result, many agents carry field radios, cell phones, and blackberries to enable mobile communication with other agencies. Universally, all agents interviewed requested a single, reliable voice and data communications system for use in the field. Many agents also expressed the need for improved data communication in the field, including the ability to transmit and store large amounts of video, sensor, and biographical data (fingerprints/photos) for future analysis. The current data communications architecture does not adequately support large data file transfer, especially between individual agents in mobile vehicles and station headquarters.

The fourth issue is the need for improved Standard Operating Procedures across multiple agencies. This often is a highly political issue, especially when the coordination involves processing, detention, prosecution and suspicion of transporting illicit drugs. Each agency follows the directives of its leadership, but the interpretation of what is acceptable in the field can vary between organizations. Stronger leadership and inter-agency cohesion is needed in this area.

#### Overcoming the Challenges

The four challenges outlined in the previous section stress the importance of an integrative approach to the organizational and technological issues to reduce illicit drug flow. On the technical side, personnel call for better technology for field communications. On the organizational side, better coordination and information sharing is a key challenge, as well as designing standard processes across organizational boundaries.

### A Model for Collaborative Governance

Figure 1 shows a model to guide the collaboration processes across agencies boundaries. The model comprises five components: starting conditions, institutional design, facilitative leadership, collaborative processes and outcomes.

The starting conditions refer to the main incentives and constraints on participating in a collaboration effort. As suggested by the model, these incentives are conditioned by a series of asymmetries in terms of power, resources and knowledge as well as previous history of collaboration among partners. Understanding the differences will play an important role in the development of a technical infrastructure to support collaboration. As stated earlier, it is likely that the perception of the usefulness of technology will vary from one agency to the other. Moreover, the need to integrate disparate databases or standard processes will also increase.

A second element is institutional design. This involves the main rules followed by the network to make decisions and design policies. It also involves the network structure, as well as assessment mechanisms. This element suggests that collaboration inside networks needs to be managed in a participatory and transparent way, including mechanisms to make decisions and solve conflicts.

A third component of the model involves facilitative leadership. The role of the leader is important, particularly when problems need to be solved by networks of agencies where power is shared. The leader in this environment has new roles to play. First, the leader is a designer of vision, policies and learning processes that enable knowledge utilization. The leader is also a teacher that helps people get more insight into the problem. Finally, the leader is a steward of peoples' needs while ensuring the success of the broader mission.

The fourth component involves the collaboration process itself. The process is a virtuous cycle where collaboration brings trust and commitment among participants, as well as a shared understanding of the problem area. However, the main challenge is to find strategies to start the

virtuous cycle. When there is no trust, people will not develop commitments or shared understanding, and are unlikely to achieve the desired outcome. In many cases, trust starts building when all participants understand the benefits of the collaboration by seeing early results. These “small wins” have proven effective in starting or accelerating the collaboration process.

Finally, the model considers the outcomes of collaboration. In the particular case presented in previous sections, the main outcomes involve the reconciling the secure and expedient transit of legitimate goods and people, while identifying and interdicting contraband items, such as illicit drugs.

### Recommendations

The following are my recommendations for what needs to be done to improve information sharing to stop the illicit flow of drugs. It is imperative to develop a multi-agency information sharing system that incorporates the following elements (figure 2).

- Training Program to Promote Trust  
Since trust is a key component of information sharing, training will be required to improve the level of trust. This training will draw upon the latest research in this field and the best practices for transmitting this knowledge to organizations.
- Social Media Monitoring  
This system will target data collection of all social media with relationship to drug activities, by extracting and synthesizing relevant data. Social networks, such as Facebook and Twitter, capture rapidly emerging and changing information regarding illicit activities. This high-value data will inform decision making based on periodic data sources with highly dynamic social networking data.
- Data Bases  
Provide access to state, local and federal databases related to drug trafficking to all agencies in the network.
- Drug-Link  
Develop a COPLINK- like system to display cues for analysis for illicit drug flows  
IBM i2 COPLINK organizes vast quantities of seemingly unrelated data to provide tactical, strategic and command-level users with access to shared data in a single, or multiple, consolidated repositories. Its proven ability to quickly identify investigative leads has helped law enforcement agencies to solve crimes faster and ensure the safety of officers and communities. IBM i2 COPLINK seamlessly scales from single data source deployments to regional information sharing initiatives, tying multiple

agencies and data sources together. The product is used in fusion centers, police and sheriff departments across the U.S. and currently supports one of the largest information sharing initiatives in the world.

- Collaborative Systems

The goal is to share insights and integrative relevant actions and plans. This system will enable the sharing of information by receiving input from all relevant systems. It will facilitate idea generation and organization, consensus building and action planning.

I hope that this testimony provides insight into better ways to facilitate collaboration and information sharing across agencies to stop the illicit flow of drugs into our country.

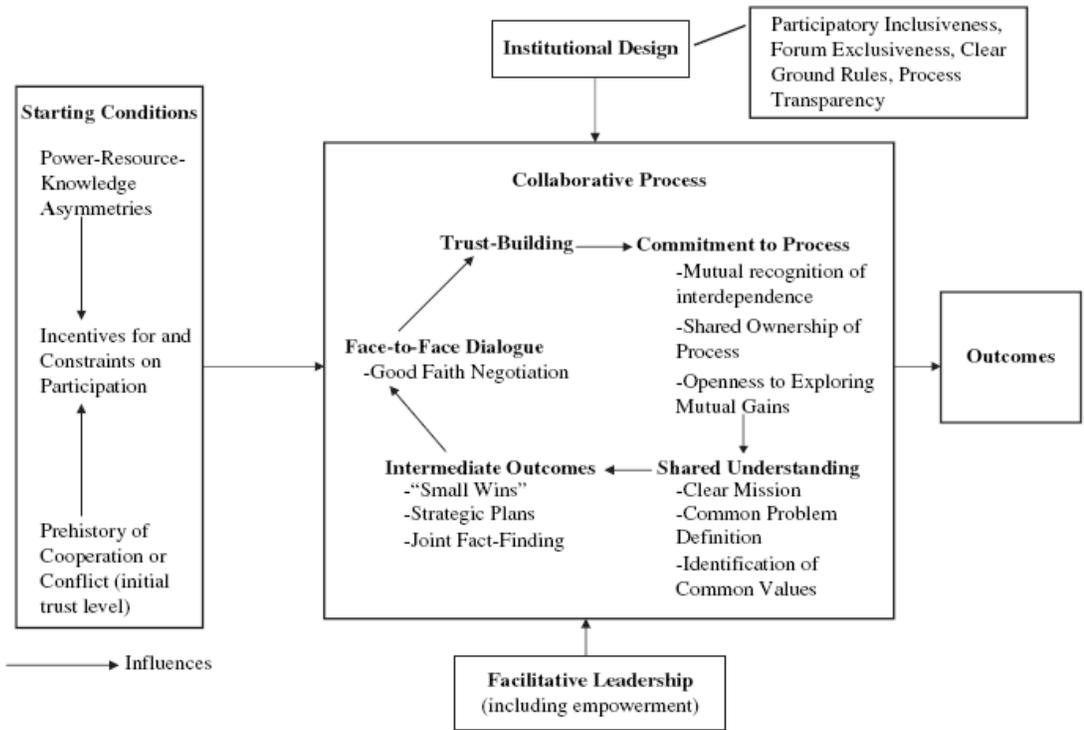


Figure 1. A Model of Collaborative Governance (Ansell & Gash, 2007).

# Information Sharing System

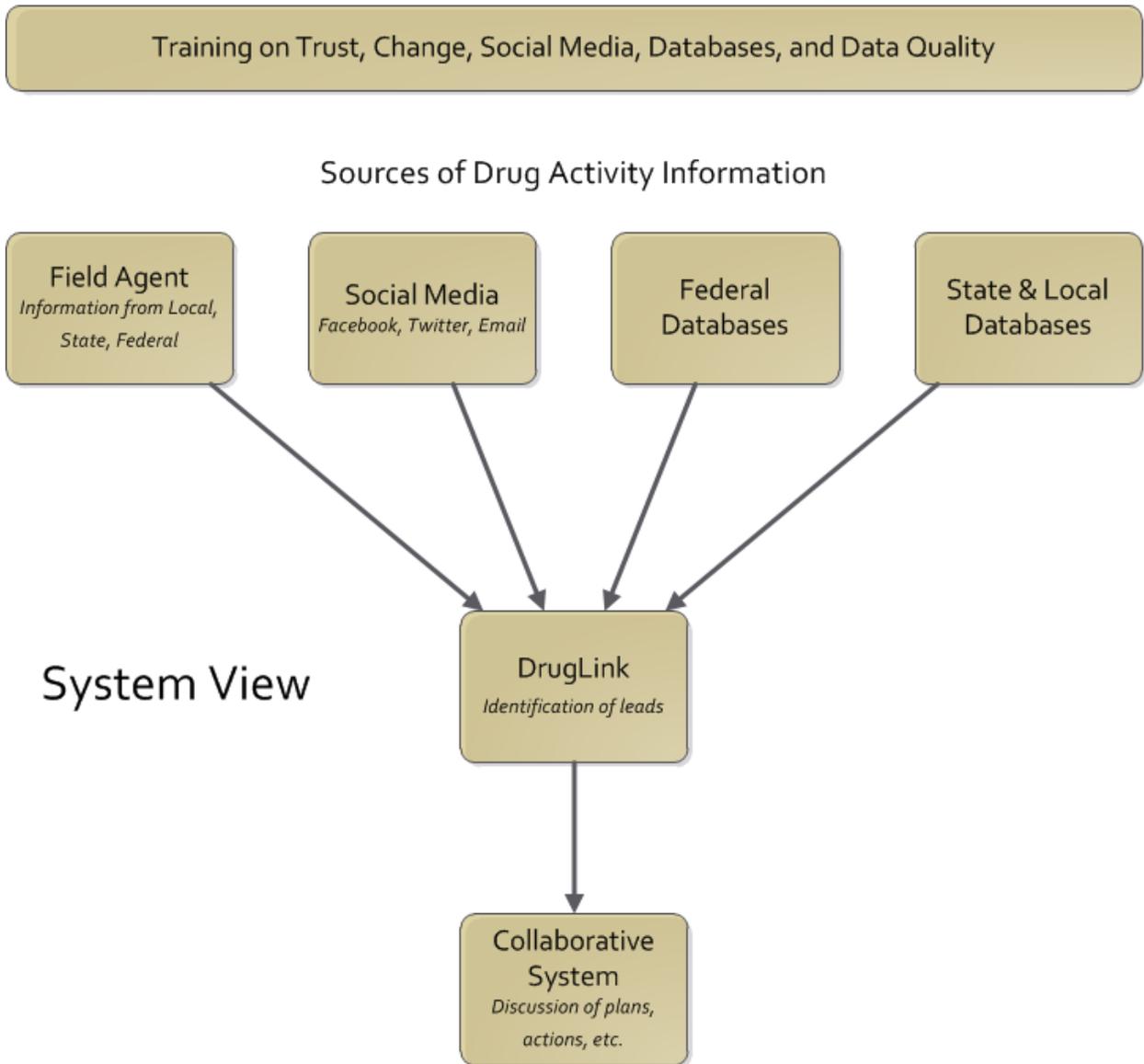
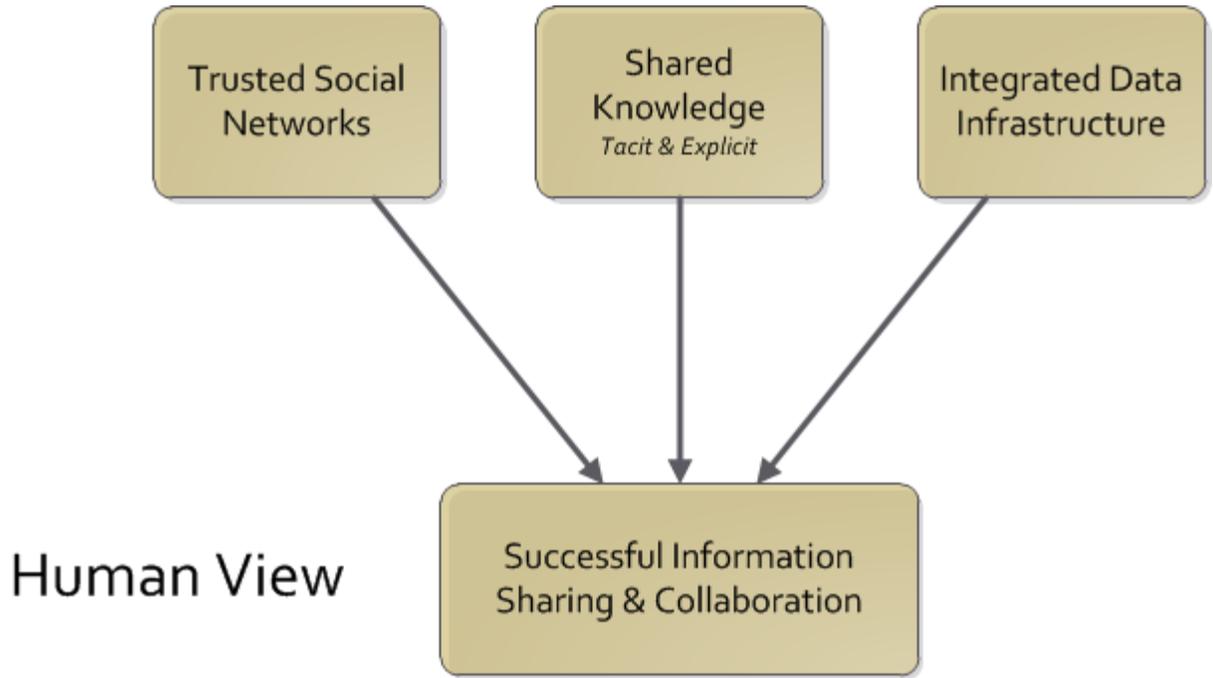


Figure 2. Information Sharing System (System View)



*Information Sharing System (Human View)*